8.1 Air Quality

This section presents the methodology and results of an analysis performed to assess potential impacts of airborne emissions from the construction and routine operation of the Sun Valley Energy Project (SVEP) project. Section 8.1.1 describes the affected environment. Section 8.1.2 examines the potential environmental consequences of the project. Section 8.1.3 discusses cumulative impacts. Section 8.1.4 describes mitigation measures. Section 8.1.5 presents applicable laws, ordinances, regulations, and standards (LORS). Section 8.1.6 presents agency contacts, and Section 8.1.7 presents permit requirements and schedules. Section 8.1.8 contains references cited or consulted in preparing this section.

8.1.1 Affected Environment

8.1.1.1 Geography and Topography

The SVEP site is located approximately 0.34 mile north of Rouse Road on the east side of the northerly extension of Junipero Road in Romoland, California. The site lies southwest of and adjacent to the Burlington Northern Santa Fe (BNSF) rail line which traverses the area in a northwest to southeast direction. The site lies in the area bounded by Ethanac Road on the north, Menifee on the east, Interstate 215 on the west, and McCall Boulevard to the south. The northerly extension of Junipero Road is directly adjacent to the western site property boundary. The nearest residence is approximately 0.31 miles west-northwest of the proposed project site. Other residential areas lie to the west, north, and south of the site, with the area to the east of the site being very sparsely populated.

The project site is essentially flat, at an average elevation of approximately 1,450 feet (ft) above sea level. To the northwest of the site lie the unincorporated community of Romoland and the City of Perris. To the northeast lie the Homeland area and the Lakeview Mountains. To the east lies a relatively unpopulated area with Double Butte being the predominant topographic feature. To the south and southwest lies the suburban area of Sun City, California. To the west lies a sparsely populated area devoted primarily to agricultural uses, with some new and future proposed residential development along the I-215 corridor. Figure 8.1-1 shows the elevations and topographic features within a six-mile radius of the SVEP. Figure 8.9-1 (in Section 8.9, Public Health) shows terrain above stack height within 10 miles of the SVEP.

8.1.1.2 Climate and Meteorology

The climate of the South Coast Air Basin (basin) is strongly influenced by the local terrain and geography. The basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean on the west, and relatively high mountains forming the north, south, and east perimeters. The climate is mild, tempered by cool sea breezes and is dominated by the semi-permanent high pressure of the eastern Pacific.

Across the 6,600 square mile basin, there is little variation in the annual average temperature of 62 degrees Fahrenheit (°F). However, the eastern portion of the basin (generally described as the Inland Empire area), experiences greater variability in annual minimum and maximum temperatures as this area is farther from the coast and the moderating affect on climate from the ocean is weaker. All portions of the basin have recorded temperatures well above 100°F. January is usually the coldest month, while the period from July through August represents the hottest months.

The majority of the rainfall in the basin falls during the period from November through April. Annual rainfall values range from approximately 9 inches per year in Riverside, to 14 inches per year in downtown Los Angeles. Monthly and annual rainfall totals can vary considerably from year to year. Cloud cover, in the form of fog or low stratus, is often caused by persistent low inversions and the cool coastal ocean water. Downtown Los Angeles experiences sunshine approximately 73 percent of the time during daylight hours, while the inland areas experience a slightly higher amount of sunshine, and the coastal areas a slightly lower value.

Although the basin is characterized by a semi-arid climate, the air near the surface can often have high relative humidity due to the presence of a shallow marine layer on most days. Except for infrequent periods of off-shore winds, the marine layer strongly influences the local climate. Periods of heavy fog are common, with “high fog” (low stratus clouds) a frequent and characteristic occurrence. The annual average relative humidity ranges from approximately 70 percent in the coastal areas to 57 percent in the inland parts of the basin.

The basin is characterized by light average wind speeds and poor ventilation. Wind speeds in the downtown Los Angeles area average 5.7 miles per hour (mph), with little seasonal variation. Coastal wind speeds typically average about 2 mph faster than the downtown wind speeds, with the inland areas showing wind speeds slightly slower than the downtown Los Angeles values. Summer wind speeds are typically higher than winter wind speeds. The recirculating sea breeze is the dominant wind pattern in the basin, characterized by a daytime on-shore flow and a nighttime land breeze. This pattern is broken by the occasional winter storm, or the strong northeasterly flows from the mountains and deserts north of the basin known as “Santa Ana winds”. The predominant winds in the basin and project area are shown in Figure 8.1-2. Wind roses, by quarter are shown on Figures 8.1-3A through 8.1-3E.

Along the southern California coast, surface air temperatures are relatively cool. Coupled with warm, dry subsiding air from aloft, the potential for early morning inversions is high, i.e., approximately 87 percent of all days. The basinwide average occurrence of inversions at ground level (surface) is 11 days per month, and varies from 2 days per month in June to 22 days per month in December. Upper air inversions, with bases at less than 2,500 ft above mean sea level (amsl) occur approximately 22 days each month, while higher based inversions, up to 3,500 ft amsl occur approximately 191 days per year.

Representative climatic data for the project area were derived from the Sun City, California site located to the southwest of the project site. These data are summarized as follows (January through December):

- Range of average temperatures = 51.2-78.9°F
- Range of average high temperatures = 66.2-98.1°F
- Range of average low temperatures = 34.5-59.8°F
- Average annual precipitation = 11.3 in/yr
- Average number of days with precipitation = 31
- Range of average wind speeds = 5.1-7.5 mph
- Range of average morning humidities = 75-82%
- Range of average afternoon humidities = 53-58%
- Sunshine percent = 59-72%

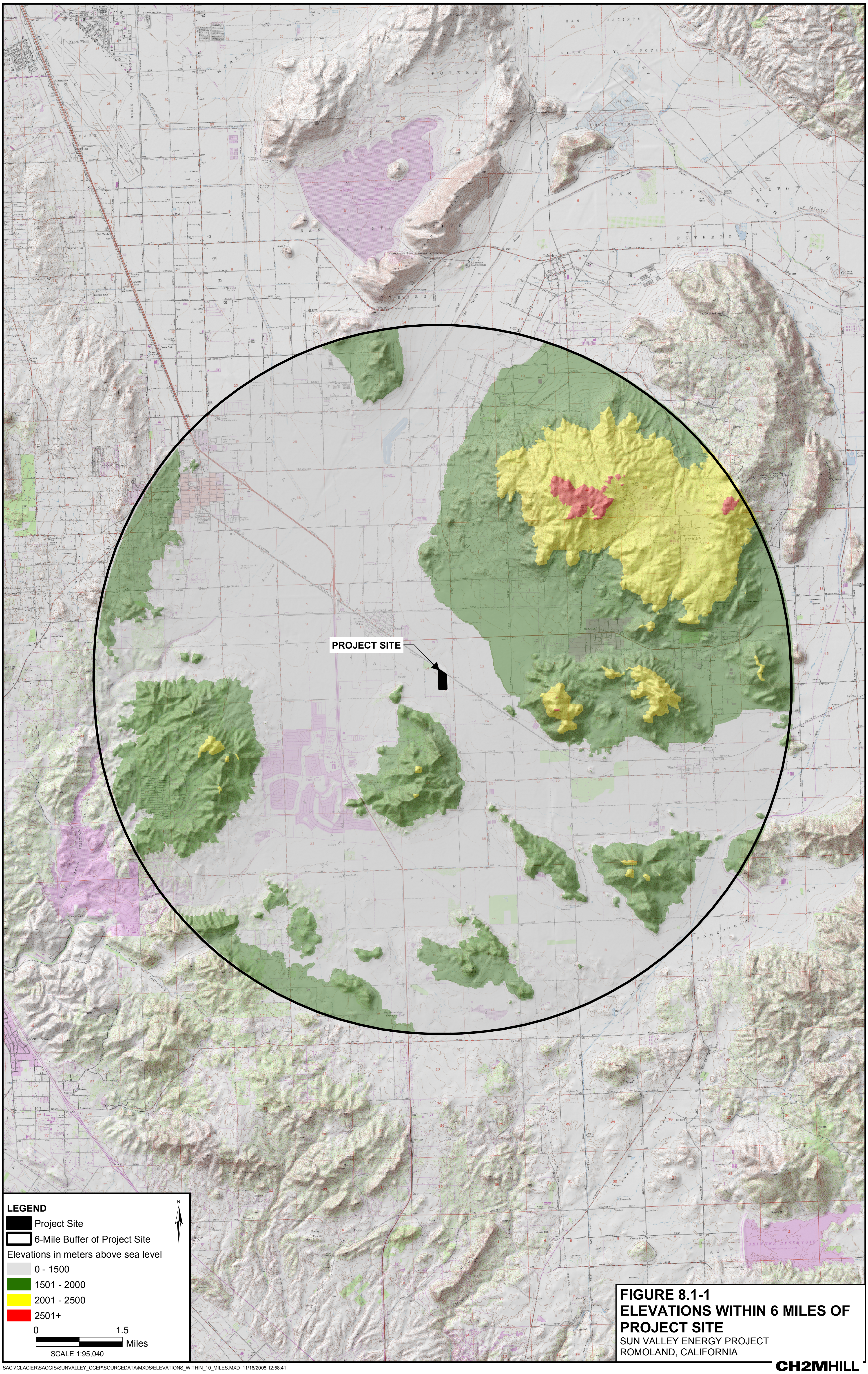
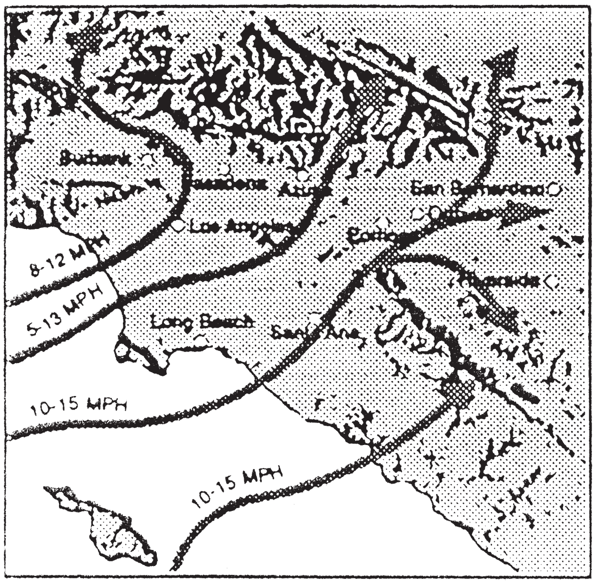


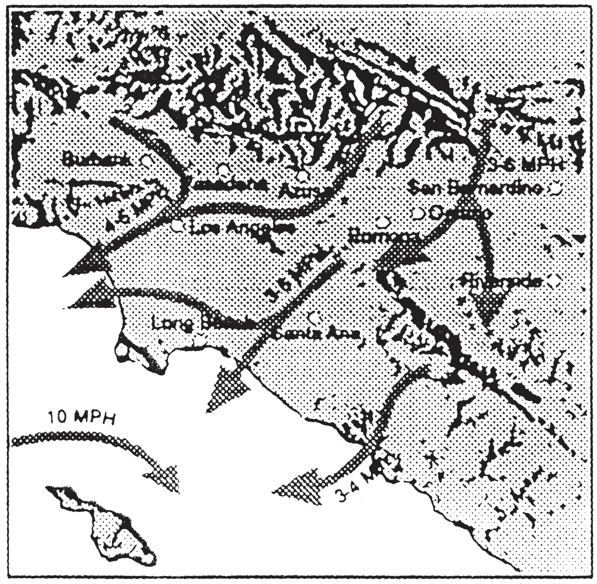
FIGURE 8.1-1
ELEVATIONS WITHIN 6 MILES OF PROJECT SITE
SUN VALLEY ENERGY PROJECT
ROMOLAND, CALIFORNIA

SAC \\GLACIER\SACGIS\SUNVALLEY_CCEP\SOURCEDATA\MXDS\ELEVATIONS_WITHIN_10_MILES.MXD 11/16/2005 12:58:41

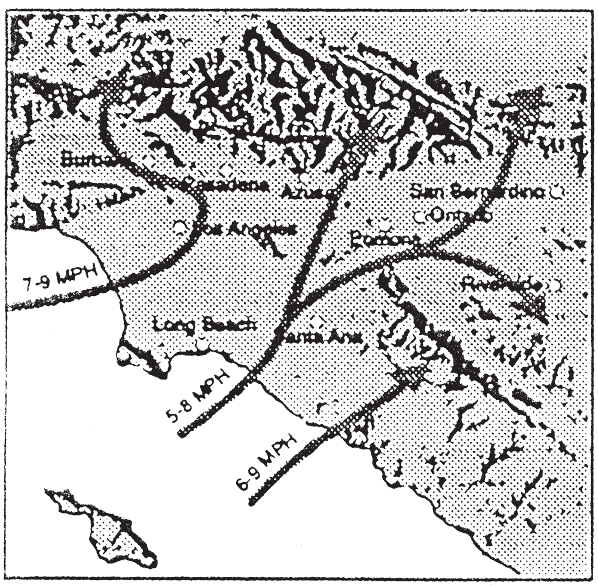
CH2MHILL



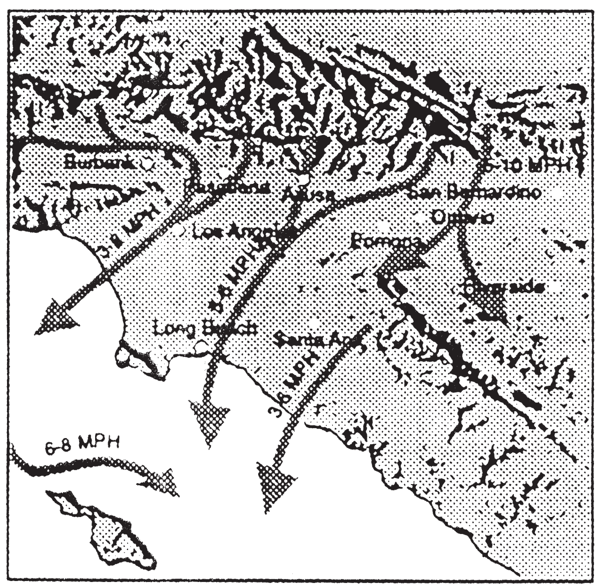
TYPICAL SUMMER DAYTIME OCEAN WINDS
(Noon to 7:00 PM)



TYPICAL SUMMER NIGHT DRAINAGE WINDS
(Midnight to 5:00 AM)



TYPICAL WINTER DAYTIME OCEAN WINDS
(Noon to 5:00 PM)



TYPICAL WINTER NIGHT DRAINAGE WINDS
(Midnight to 7:00 AM)

FIGURE 8.1-2
DOMINANT WIND PATTERNS - SOUTH COAST AIR BASIN
SUN VALLEY ENERGY PROJECT
ROMOLAND, CALIFORNIA

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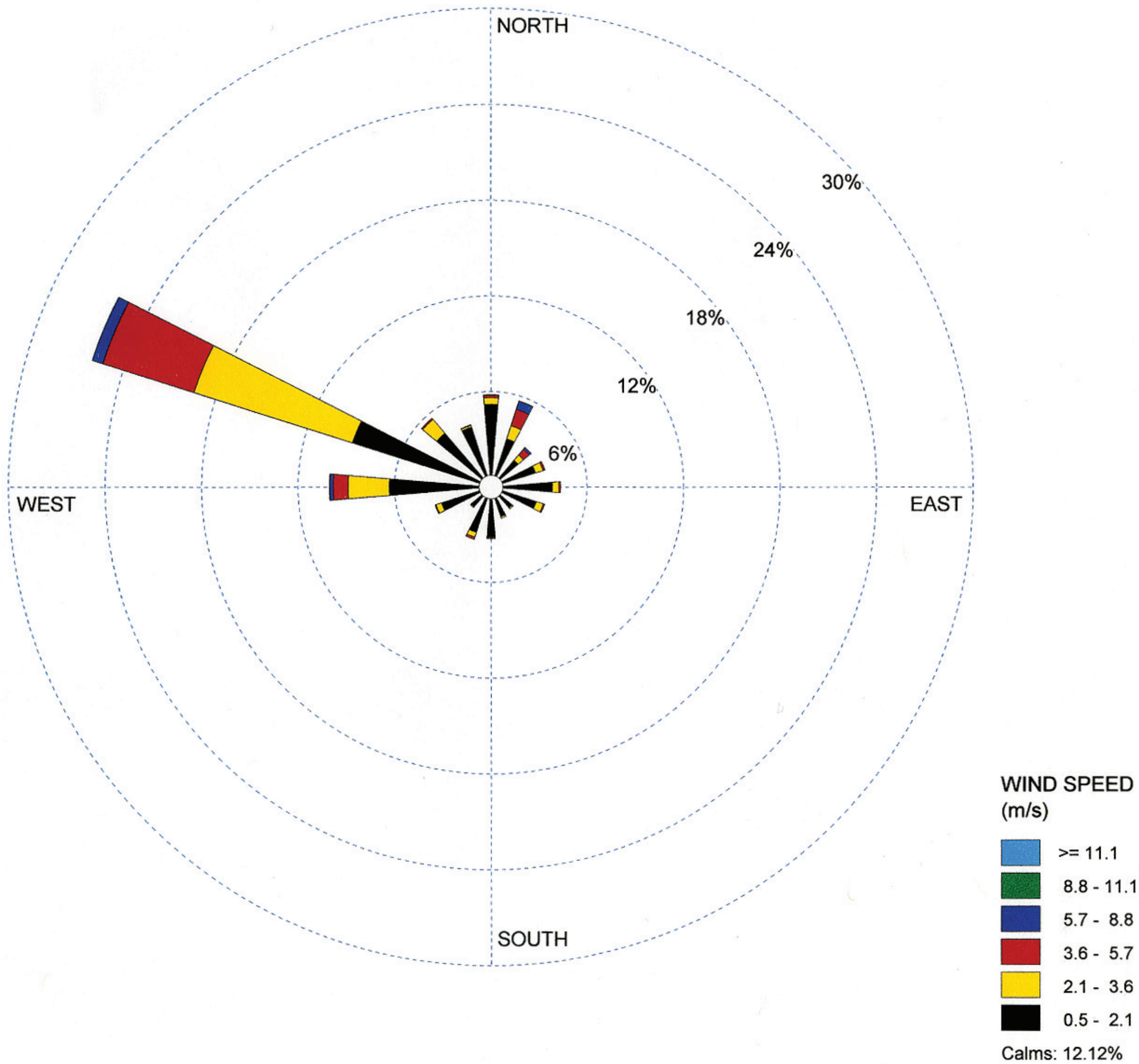

FIGURE 8.1-3A
ANNUAL WIND ROSE
SUN VALLEY ENERGY PROJECT
ROMOLAND, CALIFORNIA

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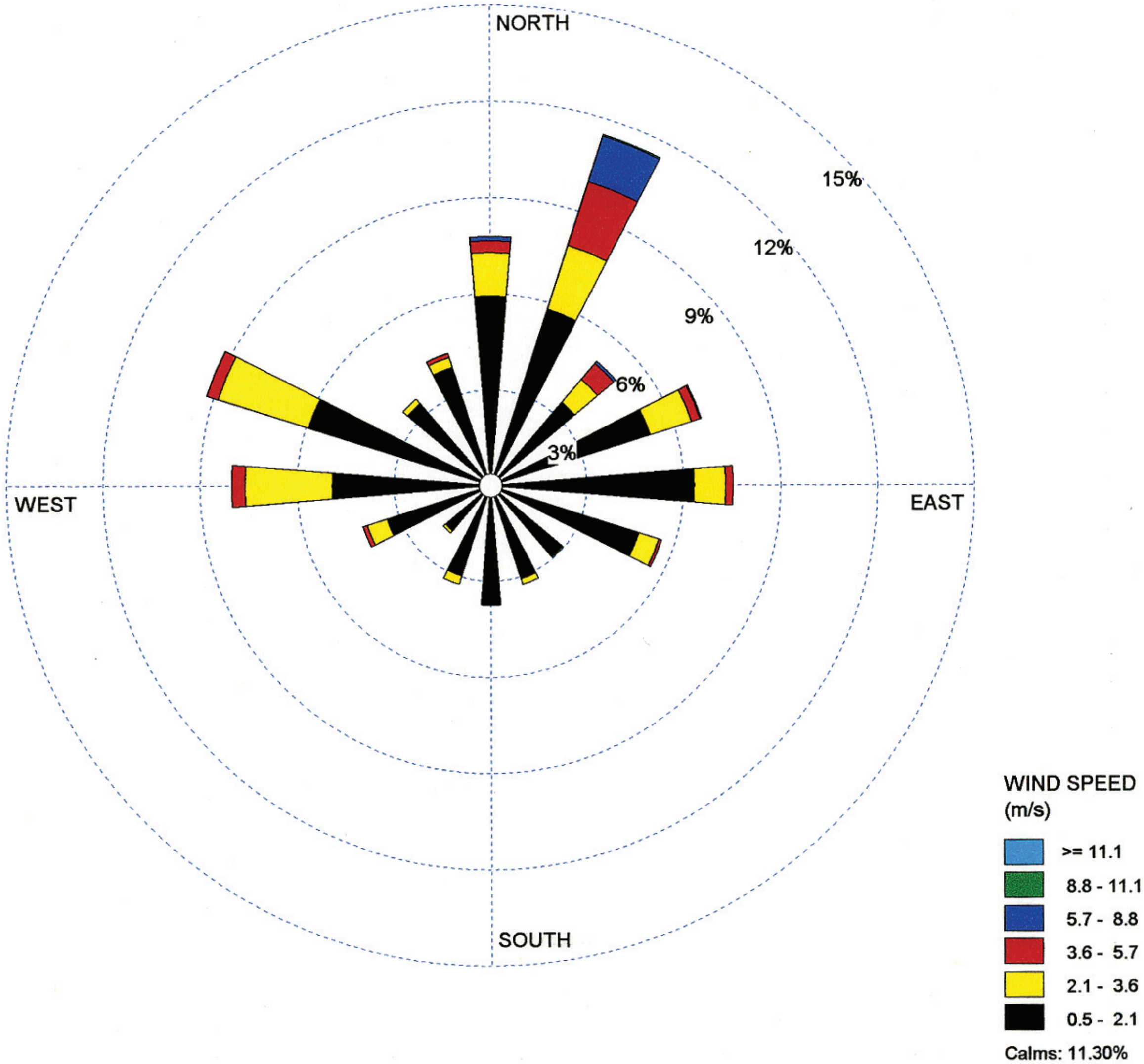

FIGURE 8.1-3B
1ST QUARTER WIND ROSE
SUN VALLEY ENERGY PROJECT
ROMOLAND, CALIFORNIA

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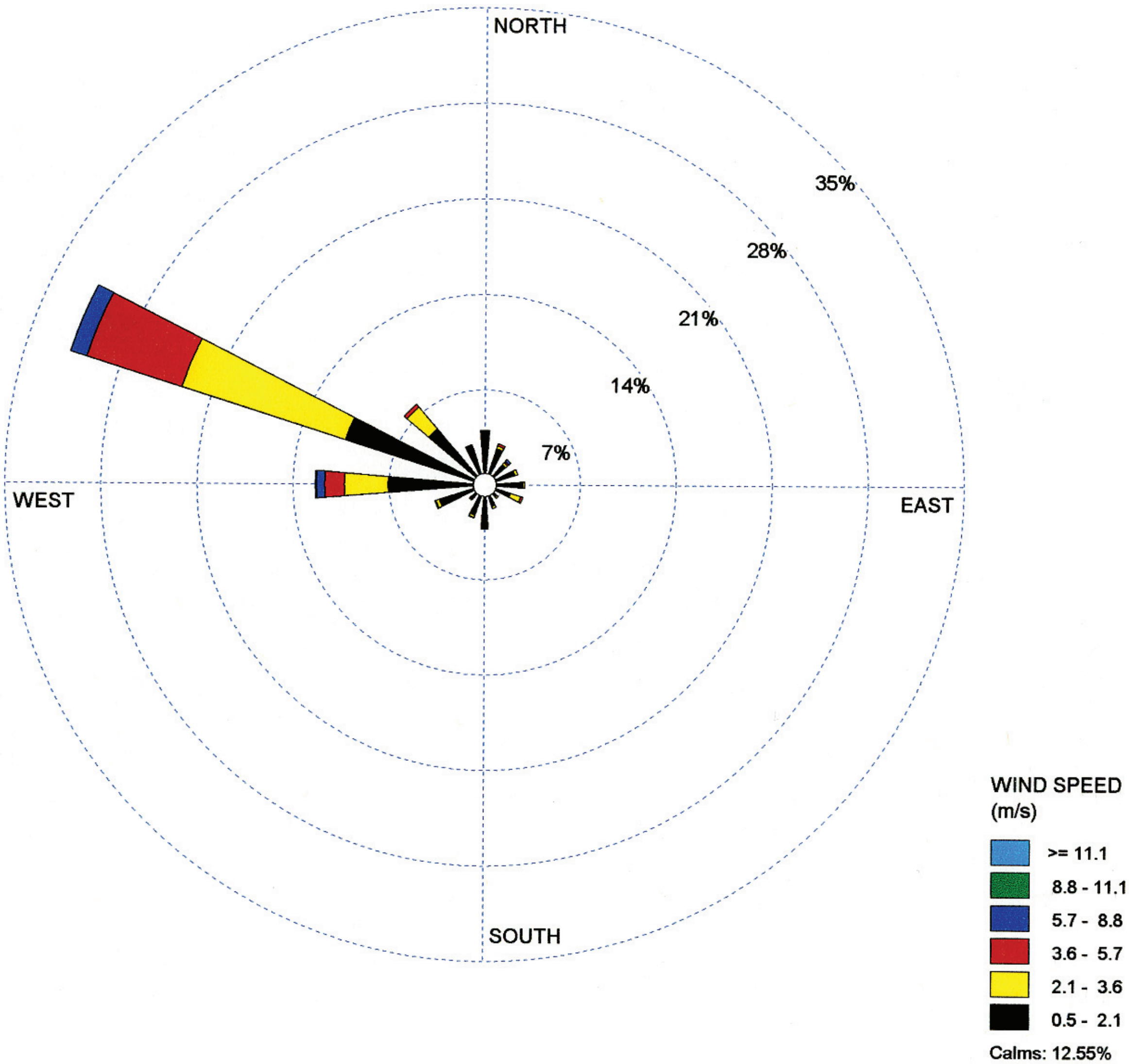

FIGURE 8.1-3C
2ND QUARTER WIND ROSE
SUN VALLEY ENERGY PROJECT
ROMOLAND, CALIFORNIA

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E092005018SAC_Sun_Valley_AFC sv_figure_8_1_3C.ai 11-16-2005 tdaus

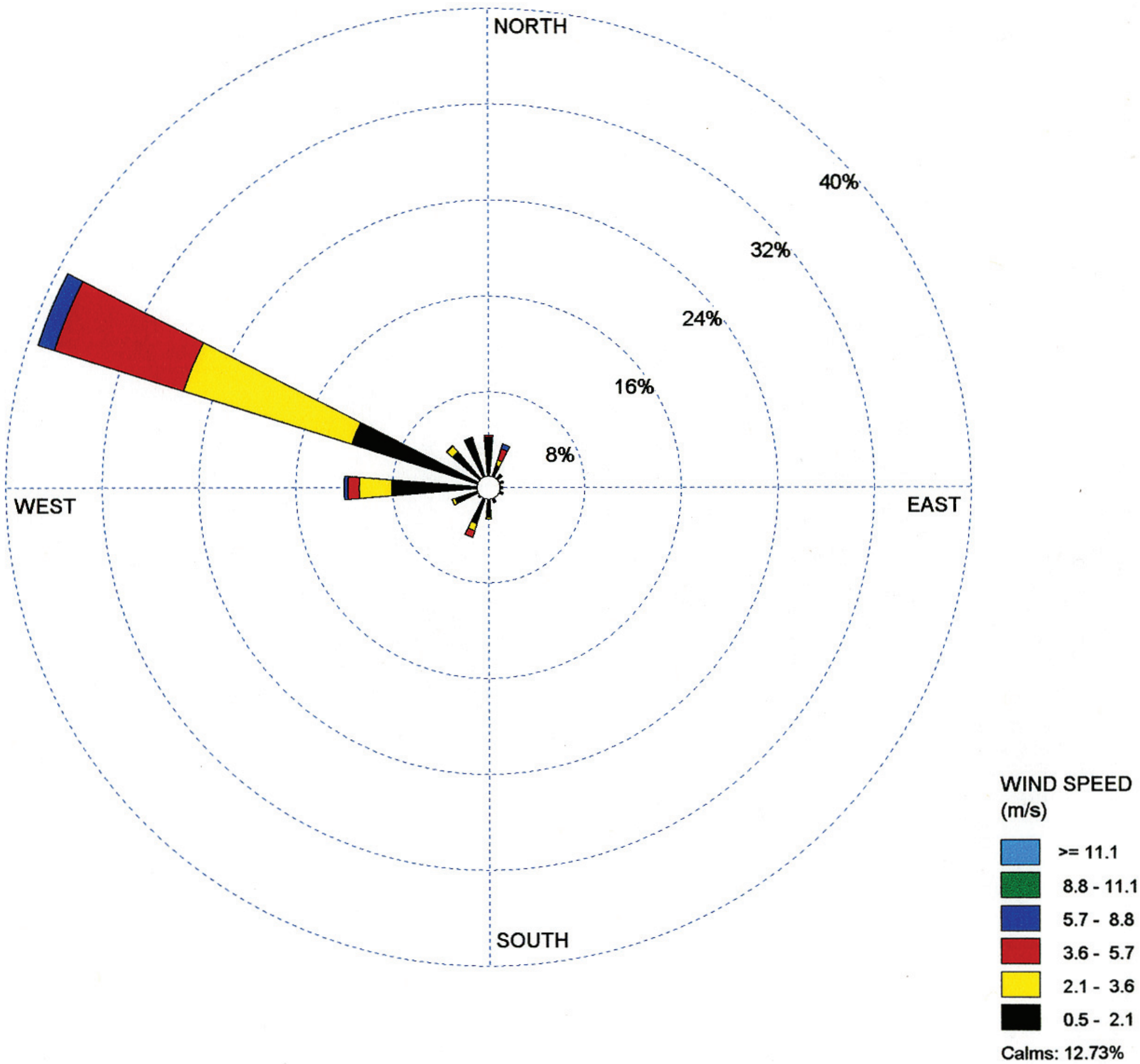

FIGURE 8.1-3D
3RD QUARTER WIND ROSE
SUN VALLEY ENERGY PROJECT
ROMOLAND, CALIFORNIA

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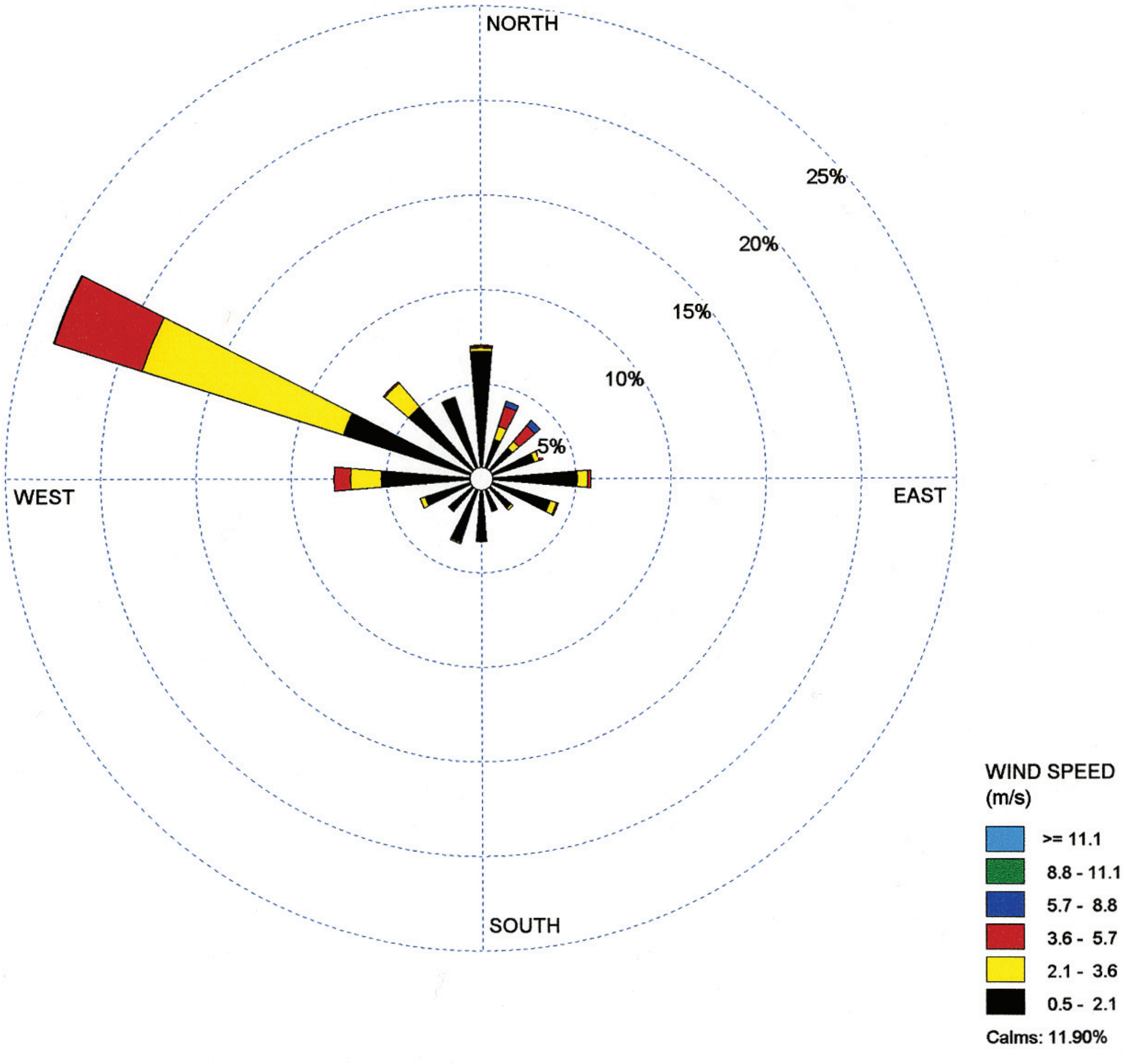

FIGURE 8.1-3E
4TH QUARTER WIND ROSE
SUN VALLEY ENERGY PROJECT
ROMOLAND, CALIFORNIA

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Historical climate data for the San Jacinto station (047810) which lies to the northeast of the site shows the following for the years 1948 through 1978:

- Annual average maximum temperature = 80.8°F
- Annual average minimum temperature = 44.4°F
- Annual average mean temperature = 62.6°F
- Maximum temperature = 116°F
- Minimum temperature = 16°F

Detailed climatic summaries for these sites are presented in Appendix 8.1B.

Air quality is determined primarily by the type and amount of pollutants emitted into the atmosphere, the topography of the air basin, and the meteorological conditions. In the project area, inversion conditions and light winds can provide conditions for pollutants to accumulate in the air basin. As Figure 8.1-2 indicates, winds in the project region generally are northerly in the summer and winter during the nighttime periods, and northwesterly in the summer and winter during the daylight periods.

The wind roses presented in Figures 8.1-3A through 8.1-3E summarize the cumulative annual and quarterly wind patterns for the Riverside meteorological site (1981). The wind roses indicate that winds are predominantly from the west through the northwest on an annual basis. Calm conditions occur approximately 12.12 percent of the time. About 46 percent of the winds come from west through northwest. In general, these winds are associated with a convective flow of cool marine air (i.e., off the Pacific Ocean) inland to the warm interior during the warm part of the day for a significant part of the year. However, there is also a moderate incidence of easterly through northeasterly wind flow (approximately 16.8 percent). These northeasterly to easterly winds occur under conditions of relatively cold temperatures inland, i.e., during the cool periods of the year and the cooler parts of the day, when temperatures over the Pacific Ocean are warmer than those inland and cause an offshore convective flow. Statistical data for the annual pattern are summarized in Table 8.1-1.

TABLE 8.1-1
Wind Speed Frequency Distribution (count) (m/s)

0.51 - 1.80	1.80 - 3.34	3.34 - 5.40	5.40 - 8.49	8.49 - 11.06	> 11.06	Total
455	25	24	4	0	0	508
279	48	123	47	1	0	498
195	26	52	14	0	0	287
254	36	17	1	0	0	308
334	26	19	0	0	0	379
259	33	15	0	0	0	307
151	7	1	0	0	0	159
172	9	0	0	0	0	181
278	6	1	0	0	0	285
263	24	16	0	0	0	303

TABLE 8.1-1
Wind Speed Frequency Distribution (count) (m/s)

0.51 - 1.80	1.80 - 3.34	3.34 - 5.40	5.40 - 8.49	8.49 - 11.06	> 11.06	Total
144	5	1	0	0	0	150
283	28	8	1	0	0	320
554	180	124	20	2	0	880
793	666	758	59	0	0	2,276
388	84	25	0	0	0	497
347	8	5	0	0	0	360
5,149	1,211	1,189	146	3	0	

Station ID: 54139, Year: 1981, Date Range: Jan 1 - Dec 31, Time Range: Midnight to 11 PM, Frequency of Calm Winds: 12.12 percent, Average Wind Speed: 1.97 m/s

8.1.1.3 Criteria Pollutants and Air Quality Trends

8.1.1.3.1 State and Federal Ambient Air Quality Standards

The U.S. Environmental Protection Agency (USEPA) has established national ambient air quality standards (NAAQS) for ozone, nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), 10-micron particulate matter (PM_{10}), 2.5-micron particulate matter ($PM_{2.5}$), and airborne lead for the protection of public health and welfare. In general, if these NAAQS are exceeded in an area greater than or equal to four instances in any consecutive 3-year period, the area is considered a “nonattainment area” subject to planning and pollution control requirements that are more stringent than normal requirements.

In addition, the California Air Resources Board (CARB) has established standards for ozone, CO, NO_2, SO_2, sulfates, PM_{10}, airborne lead, hydrogen sulfide, and vinyl chloride at levels designed to protect the most sensitive members of the population, particularly children, the elderly, and people who suffer from lung or heart diseases. CARB carries out control program oversight activities as well as having primary jurisdiction in the area of mobile source regulations, while the local air pollution control districts have primary responsibility for air quality planning and enforcement with respect to stationary sources.

Both state and national air quality standards consist of two parts: an allowable concentration of a pollutant and an averaging time over which the concentration is to be measured. Allowable concentrations are based on the results of studies of the effects of the pollutants on human health, crops and vegetation, and, in some cases, damage to paint and other materials. The averaging times are based on whether the damage caused by the pollutant is more likely to occur during exposures to a high concentration for a short time (1 hour, for instance), or to a relatively lower average concentration over a longer period (8 hours, 24 hours, or 1 year). For some pollutants, there is more than one air quality standard, reflecting both its short-term and long-term effects. Table 8.1-2 presents the state and national ambient air quality standards for selected pollutants. Many of the California ambient air quality standards are more stringent than the federal standards and have shorter averaging periods. USEPA’s new NAAQS for ozone and fine particulate matter went into effect on September 16, 1997. For ozone, the previous 1-hour standard of 0.12 parts per million (ppm) was replaced by an

8-hour average standard at a level of 0.08 ppm. Compliance with this standard is based on the 3-year average of the annual fourth-highest daily maximum 8-hour average concentration measured at each monitor within an area.

The NAAQS for particulates were also revised in several respects. First, compliance with the current 24-hour PM_{10} standard is now based on the 99th percentile of 24-hour concentrations at each monitor within an area. In addition, two new $PM_{2.5}$ standards were added: a standard of 15 μg/m^3, based on the 3-year average of annual arithmetic means from single or multiple monitors (as available); and a standard of 65 μg/m^3, based on the 3-year average of the 98th percentile of 24-hour average concentrations at each monitor within an area. USEPA is delaying implementation of the new standards for an interim period to allow time to establish $PM_{2.5}$ monitoring networks, designate areas, and develop control strategies. Presently, USEPA has only moderate amounts of data to establish the air quality status of areas with regard to $PM_{2.5}$. Specific monitoring station data used for the establishment of background values are given below.

TABLE 8.1-2
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards Concentration	National Standards Concentration
Ozone	1 hour	0.09 ppm	0.12 ppm
	8 hours	-	0.08 ppm (3-year average of annual 4th-highest daily maximum)
CO	8 hours	9.0 ppm	9 ppm
	1 hour	20 ppm	35 ppm
NO_2	annual average	-	0.053 ppm
	1 hour	0.25 ppm	-
SO_2	annual average	-	80 μg/m^3 (0.03 ppm)
	24 hours	0.04 ppm (105 μg/m^3)	365 μg/m^3 (0.14 ppm)
	3 hours	-	1,300 μg/m^3 (0.5 ppm)
	1 hour	0.25 ppm	-
PM_{10}	annual geometric mean	30 μg/m^3	-
	24 hours	50 μg/m^3	150 μg/m^3
	annual arithmetic mean	-	50 μg/m^3
$PM_{2.5}$	annual arithmetic mean	-	15 μg/m^3 (3-year average)
	24 hours	-	65 μg/m^3 (3-year average of 98th percentiles)
Sulfates	24 hours	25 μg/m^3	-
Lead	30 days	1.5 μg/m^3	-
	calendar quarter	-	1.5 μg/m^3

ppm = parts per million
μg/m^3 = micrograms per cubic meter

8.1.1.3.2 Ambient Monitoring

Existing state and local ambient monitoring stations and national ambient monitoring stations (SLAMS/NAMS) were used to characterize the air quality at the project site. These stations were utilized because of their proximity to the project site and because they record area-wide (neighborhood, regional, and urban scale) ambient conditions rather than the localized impacts of any particular facility. All ambient air quality data presented in this section were taken from CARB, South Coast Air Quality Management District (SCAQMD), and USEPA publications and data sources. Table 8.1-3 summarizes historical air quality data in the South Coast Air Basin for the period from 1995 to 2004. Monitoring station location and pollutant data used to establish background air quality for the project area are as follows:

- Ozone Data—Perris and Lake Elsinore Monitoring Stations
- NO_2 Data—Lake Elsinore and Riverside-Rubidoux Monitoring Stations
- CO Data—Lake Elsinore and Riverside-Magnolia Monitoring Stations
- PM_{10} Data—Perris, Banning, and Riverside-Rubidoux Monitoring Station
- $PM_{2.5}$ Data—Riverside-Rubidoux and Magnolia Monitoring Stations
- SO_2 Data—Riverside-Rubidoux Monitoring Station
- Lead—Riverside-Rubidoux and Magnolia Monitoring Stations
- Sulfate—Riverside-Rubidoux and Magnolia Monitoring Stations

Data from the most recent last 3 years were be used to establish background concentration values for all pollutants. A "ND" designation indicates that no data were available on either the CARB or SCAQMD web sites or monitoring summaries.

8.1.1.3.3 Ozone

Ozone is generated by a complex series of photo-chemical reactions between precursor volatile organic compounds (VOC) and oxides of nitrogen (NO_x) in the presence of ultraviolet radiation. Ambient ozone concentrations follow a seasonal pattern: highest in the summer time and lowest in the winter-time. At certain times, the basin area can provide ideal conditions for the formation of ozone due to persistent temperature inversions, clear skies, mountain ranges to trap the air mass, and exhaust emissions from motor vehicles and stationary, area, and biogenic sources. Based upon data collected at ambient air monitoring stations located throughout the area, the South Coast Air Basin is classified as a nonattainment area for ozone for both state and federal air quality standards.

Ozone, the major constituent of smog, is formed through a complex series of chemical reactions in the presence of sunlight. Reactive and volatile organic compounds (ROC and VOC) and oxides of nitrogen (NO_x) are the principal constituents in these reactions. Ozone is formed by complex photochemical reactions in the atmosphere involving NO_x and ROC/VOC with ultraviolet energy from sunlight. Motor vehicles, power plants, petroleum refining storage and dispensing facilities, pesticides, and organic solvents are the major sources of NO_x and ROC/VOC. Ozone is a pungent, colorless, toxic gas created when three oxygen molecules bond together. Ozone is known as a secondary pollutant since the gas is formed in the atmosphere, rather than emitted directly into the air. The period of highest ozone levels and greatest frequency of occurrence typically extends from May through October and is known as "smog season." Ozone is a strong irritant, which can cause and aggravate various respiratory conditions. Healthy people exposed to high ozone concentrations may become nauseated or dizzy, may develop headaches or coughs, or may

TABLE 8.1-3
South Coast Air Basin Historic Air Quality Data Summary

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004*
Ozone (ppm)										
Peak indicator – 1 hour	0.249	0.233	0.229	0.224	0.211	0.213	0.172	0.172	0.178	ND
Peak indicator – 8 hour	0.186	0.175	0.168	0.182	0.179	0.178	0.144	0.144	0.146	ND
4th high 1 hour (3 years)	0.250	0.231	0.215	0.217	0.211	0.211	0.170	0.169	0.180	ND
Average 4th high 8 hour (3 years)	0.165	0.161	0.148	0.154	0.147	0.146	0.129	0.128	0.131	ND
Maximum 1-hour concentration	0.256	0.239	0.205	0.244	0.174	0.184	0.190	0.169	0.194	0.16
Maximum 8-hour concentration	0.203	0.173	0.148	0.206	0.142	0.149	0.144	0.144	0.153	0.15
Days above national 1-hour standard	98	85	64	60	39	33	36	45	64	27
Days above national 8-hour standard	120	115	118	93	93	94	92	96	109	88
PM_{10} (µg/m^3)										
Max 24-hour concentration (State)	219	162	208	116	183	139	219	130	164	ND
Max 24 hour concentration (Federal)	219	162	208	116	183	139	219	130	164	ND
Annual average (State)	68.8	61.5	65.3	50.2	72.2	60.1	62.9	58.4	56.9	ND
Annual average (Federal)	68.8	62.8	65.6	50.2	72.2	59.1	63.3	58.1	55.3	ND
Max 24-hour concentration (State)	219	162	208	116	183	139	219	130	164	ND
Max 24 hour concentration (Federal)	219	162	208	116	183	139	219	130	164	ND
Calculated days above national 24-hour standard	31	6	17	0	6	0	5	0	6	ND
CO (ppm)										
Maximum 8-hour concentration	13.8	17.5	17.1	13.3	11.2	10.1	7.6	10.1	7.3	ND
Days above state 8-hour standard	17	26	18	13	11	6	0	1	0	ND
Days above national 8-hour standard	14	19	13	10	7	3	0	1	0	ND

TABLE 8.1-3
South Coast Air Basin Historic Air Quality Data Summary

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004*
NO_2 (ppm)										
Maximum 1-hour concentration	0.239	0.250	0.200	0.255	0.307	0.214	0.251	0.262	0.163	ND
Maximum annual average	0.046	0.042	0.043	0.043	0.051	0.044	0.041	0.040	0.035	ND
SO_2 (ppm)										
Peak indicator – 1 hour	0.06	0.05	0.06	0.05	0.05	0.05	0.05	0.04	0.04	ND
Maximum annual concentration	0	0	0	0	0	0	0	0	0	ND
Maximum 24-hour concentration	0.02	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.01	ND

Source: CARB 2005a, The 2005 California Almanac of Emissions and Air Quality.

* January through October preliminary data only.

experience a burning sensation in the chest. Symptoms appear to be aggravated by exercise. Ozone adversely effects vegetation, including damage to food crops, ornamental plants, and natural vegetation including forests. Ozone also affects materials such as surface coatings, fabrics, and rubber.

Maximum ozone concentrations at the identified stations usually are recorded during the summer months. Tables 8.1-4 and 8.1-5 show the annual maximum hourly ozone levels recorded at the Perris and Lake Elsinore monitoring stations, respectively, during the period 1996-2004, as well as the number of days in which the state and federal standards were exceeded. Data from these stations over the last 3 years indicate that ozone concentrations have been consistently above both the state and federal standards.

TABLE 8.1-4
Ozone Levels at the Perris Monitoring Station, 1996-2004 (ppm)

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Highest 1-hour value	0.18	0.14	0.15	0.11	0.16	0.152	0.147	0.155	0.128
Highest 8-hour value	ND	0.11	0.13	0.10	0.126	0.136	0.117	0.121	0.104
Number of days exceeding:									
State standard (0.09 ppm, 1-hour)	95	64	38	10	65	73	59	67	36
Federal standard (0.12 ppm, 1-hour)	31	6	8	0	15	19	4	7	2
Federal standard (0.08 ppm, 8-hour)	ND	41	28	7	41	58	41	46	20

Source: SCAQMD, CARB.

TABLE 8.1-5
Ozone Levels at the Lake Elsinore Monitoring Station, 1996-2004 (ppm)

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Highest 1-hour value	0.15	0.16	0.17	0.14	0.13	0.151	0.139	0.154	0.13
Highest 8-hour value	ND	0.12	0.14	0.13	0.109	0.12	0.114	0.137	0.113
Number of days exceeding:									
State standard (0.09 ppm, 1-hour)	65	49	52	51	45	61	52	50	34
Federal standard (0.12 ppm, 1-hour)	17	4	22	4	1	12	6	7	2
Federal standard (0.08 ppm, 8-hour)	ND	38	44	37	31	46	44	36	21

Source: SCAQMD, CARB.

8.1.1.3.4 Nitrogen Dioxide

Oxides of nitrogen are primarily generated from the combustion of fuels. Oxides of nitrogen include nitric oxide (NO), nitrous oxide (N_2O) and NO_2. Since NO converts to NO_2 in the atmosphere over time and NO_2 is the more toxic of the two, NO_2 is the listed criteria pollutant. The control of NO_2 is important because of its role in the formation of ozone. N_2O is a much less toxic compound than NO_2 or NO but is an important greenhouse gas with respect to global climate change.

There are a number of NO_x compounds, but only two are important with respect to local and regional air quality: NO, a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or pressure; and NO_2, a reddish-brown irritating gas formed by the combination of NO with oxygen. NO plays a critical role in the photochemical reaction that produces ozone. High temperature combustion causes nitrogen and oxygen to combine and form NO and NO_2. Further reactions in the atmosphere downwind of the emitting source produce additional NO_2. Combustion in motor vehicle engines, power plants, refineries, and other industrial operations all generate NO_x emissions. Exposure to NO_2 increases the incidence of respiratory infections among children, and causes difficulty in breathing among healthy people, persons with chronic bronchitis, and in asthmatics. An increased incidence of acute respiratory disease in children and adults may occur after repeated exposure to elevated levels of NO_2 in combination with other pollutants. NO_2 also causes visibility problems. The gas creates the brownish haze often associated with smog.

Based upon regional air quality measurements of NO_2, the South Coast Air Basin is in attainment for NO_2 for both state and federal standards.

Tables 8.1-6 and 8.1-7 show the maximum 1-hour NO_2 levels recorded at the Lake Elsinore and Riverside Magnolia monitoring stations each year from 1996 through 2004, as well as the annual average level for each of those years. During this period there have been no violations of either the state 1-hour standard or the annual NAAQS of 0.53 ppm.

TABLE 8.1-6
Nitrogen Dioxide Levels at the Lake Elsinore Monitoring Station, 1996-2004 (ppm)

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Highest 1-hour average	0.10	0.11	0.09	0.11	0.08	0.09	0.07	0.074	0.09
Annual average (NAAQS = 0.53 ppm)	0.0182	0.0165	0.0174	0.02	0.0175	0.0185	0.0173	0.018	0.015
Number of days exceeding:									
State standard (0.25 ppm, 1-hour)	0	0	0	0	0	0	0	0	0

Source: SCAQMD, CARB.

TABLE 8.1-7
Nitrogen Dioxide Levels at the Riverside Rubidoux Monitoring Station, 1996-2004 (ppm)

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Highest 1-hour average	0.11	0.12	0.10	0.13	0.10	0.15	0.10	0.099	0.092
Annual average (NAAQS = 0.53 ppm)	0.0294	0.0262	0.0225	0.0255	0.0236	0.0247	0.0237	0.021	0.017
Number of days exceeding:									
State standard (0.25 ppm, 1-hour)	0	0	0	0	0	0	0	0	0

Source: SCAQMD, CARB.

8.1.1.3.5 Carbon Monoxide

CO is a product of incomplete or inefficient combustion, principally from automobiles and other mobile sources of pollution. CO is a colorless, odorless, toxic gas produced by incomplete combustion of carbon-containing substances. CO concentrations are generally higher in the winter months during morning hours, when vertical mixing of the atmosphere is limited. Motor vehicles are the primary source of CO. Combustion processes from various industrial sources can also produce significant amounts of CO. CO does not irritate the respiratory tract, but passes through the lungs directly into the blood stream and, by interfering with the transfer of fresh oxygen to the blood, deprives sensitive tissues of oxygen. CO is not known to have adverse effects on vegetation, visibility, or materials. In many areas of California, CO emissions from wood-burning stoves and fireplaces can also be measurable contributors. Industrial sources in the South Coast Air Basin typically contribute only a minor portion of ambient CO levels. Peak CO levels occur typically during winter months, due to a combination of higher emission rates and calm weather conditions with strong, ground-based inversions. Based upon ambient air quality monitoring, the South Coast Air Basin is classified as attainment for state CO standards and non-attainment for federal standards. The South Coast Air Quality Management District (SCAQMD) has requested re-designation for the federal standards to a status of attainment. The USEPA and CARB have yet to act on this request for re-designation.

Tables 8.1-8 and 8.1-9 show the air quality standards for CO, and the maximum 1-hour and 8-hour average levels recorded at the Lake Elsinore and Riverside Magnolia monitoring stations during the period 1996-2004.

Trends of maximum 8-hour and 1-hour average CO as shown in Tables 8.1-8 and 8.1-9 indicate that maximum ambient CO levels at all stations have been below the state and federal standards for many years, and continue to decline.

TABLE 8.1-8
Carbon Monoxide Levels at the Lake Elsinore Monitoring Station, 1996-2004 (ppm)

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Highest 8-hour average	ND	ND	ND	ND	2	2	2	1.39	1.14
Highest 1-hour average	ND	ND	ND	ND	4	2	3	4	2
Number of days exceeding:									
State standard (9.0 ppm, 8-hour)	ND	ND	ND	ND	0	0	0	0	0
State standard (20 ppm, 1-hour)									
Federal standard (9 ppm, 8-hour)					0	0	0	0	0
Federal standard (35 ppm, 1-hour)									

Source: SCAQMD, CARB.

TABLE 8.1-9
Carbon Monoxide Levels at the Riverside Magnolia Monitoring Station, 1996-2004 (ppm)

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Highest 8-hour average	5.4	5	4.6	4.1	4.3	4.5	3.9	3.33	2.15
Highest 1-hour average	9	11	6	7	9	6	7	4.5	4.3
Number of days exceeding:									
State standard (9.0 ppm, 8-hour)	0	0	0	0	0	0	0	0	0
State standard (20 ppm, 1-hour)	0	0	0	0					
Federal standard (9 ppm, 8-hour)	0	0	0	0	0	0	0	0	0
Federal standard (35 ppm, 1-hour)	0	0	0	0					

Source: SCAQMD, CARB.

8.1.1.3.6 Sulfur Dioxide

SO_2 is produced when any sulfur-containing fuel is burned. It is also emitted by chemical plants that treat or refine sulfur or sulfur-containing chemicals. Natural gas contains negligible sulfur, while fuel oils contain larger amounts. Peak concentrations of SO_2 occur at different times of the year in different parts of California, depending on local fuel characteristics, weather, and topography. SO_2 is a colorless, pungent, irritating gas formed primarily by the combustion of sulfur-containing fossil fuels. In humid conditions, some of the SO_2 may be changed to sulfur trioxide and sulfuric acid mist, with some of the latter eventually reacting with other materials to produce sulfate particulates. This contaminant is a by-product of combustion of sulfur-containing fossil fuels. Liquid and solid fuel combustion is a major source of SO_2. Oil and coal fired power plants and motor vehicles account for the majority of the SO_2 emissions. At high concentrations, SO_2 irritates the upper respiratory tract. At lower concentrations in conjunction with particulate matter, SO_2 harms the lung tissues. SO_2 also has adverse effects on plant growth. Finally, SO_2 can form sulfate aerosols in the atmosphere, which reduce visibility. The South Coast Air Basin has been designated as attainment for SO_2 with respect to both the NAAQS and CAAQS.

Table 8.1-10 presents the state air quality standards for SO_2 and the maximum levels recorded at the Riverside Magnolia monitoring station from 1996 through 2004. The average SO_2 levels at all monitoring stations have been well below the state and federal standards.

TABLE 8.1-10
Sulfur Dioxide Levels at the Riverside Rubidoux Monitoring Station, 1996-2004 (ppm)

	1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
Highest 1-hour value	0.01	0.04	0.03	0.03	0.11	0.02	0.02	0.018	0.017
24 Hour Average	0.004	0.007	0.01	0.011	0.041	0.011	0.003	0.012	0.015
Annual average	0.0001	0.0003	0.0011	0.0014	0.0008	-	-	0.002	0.003
Number of days exceeding:									
State standard (0.25 ppm, 1-hr)	0	0	0	0	0	0	0	0	0

Source: SCAQMD, CARB.

8.1.1.3.7 Particulate Sulfates

Particulate suspended sulfates are generated from the oxidation of SO_2 in the atmosphere. The South Coast Air Basin is in attainment with the state standard for sulfates. There is no federal standard for sulfates.

Tables 8.1-11 and 8.1-12 show the California air quality standard for particulate suspended sulfate and the maximum 24-hour average levels recorded at the Riverside Rubidoux and Magnolia monitoring stations from 1996 to 2004. Maximum levels are typically well below the state standard.

TABLE 8.1-11
Particulate Suspended Sulfate Levels at the Riverside Magnolia Station, 1996-2004 ($\mu g/m^3$)

	1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
Highest 24-hour value	17	10.4	12.8	10.6	10.2	9.2	10.5	10	9.1
Number of days exceeding:									
State standard (25 $\mu g/m^3$, 24-hour)	0	0	0	0	0	0	0	0	0

Source: SCAQMD, CARB.

TABLE 8.1-12
Particulate Suspended Sulfate Levels at the Riverside Rubidoux Station, 1996-2004 (µg/m^3)

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Highest 24-hour value	14.9	13.1	10.1	10.7	11	10.7	11.7	10.1	9.8
Number of days exceeding:									
State standard (25 µg/m^3, 24-hour)	0	0	0	0	0	0	0	0	0

Source: SCAQMD, CARB.

8.1.1.3.8 Particulates (PM_{10} and $PM_{2.5}$)

Particulates in the air are caused by a combination of wind-blown fugitive dust; particles emitted from combustion sources and manufacturing processes; and organic, sulfate, and nitrate aerosols formed in the air from emitted hydrocarbons, sulfur oxides, and nitrogen oxides. Atmospheric particulates are made up of fine solids or liquids such as soot, dust, aerosols, fumes, and mists. A large portion of the particulate suspended in the atmosphere is finer than 10 microns (one micron is one millionth of a meter) or even smaller at less than 2.5 microns in diameter. These small particulates cause the greatest health risk, and have both federal (PM_{10} and $PM_{2.5}$) and state standards (PM_{10} only). Particulate matter consists of particles in the atmosphere resulting from many kinds of fume-producing industrial and agricultural operations, motor vehicle tires, combustion, and atmospheric photochemical reactions. Natural activities also release particulates into the atmosphere; wind-blown dust and wildfires are the predominant form of particulates from natural sources in the study area. The nose and throat are able to stop most large particles. However, very small particles can easily bypass this natural filtering system and lodge deep in the lungs. PM_{10} and $PM_{2.5}$ are considered a greater health risk than larger particles due to their ability to be inhaled deep into the lungs. PM_{10} and $PM_{2.5}$ particles cannot be removed from the lungs by exhaling, and may be carriers of toxic materials that can be absorbed by the blood and carried to other parts of the body. Suspended in the air, particulates can both scatter and absorb sunlight, producing haze and reducing visibility.

In 1984, CARB adopted standards for PM_{10} and phased out the total suspended particulate (TSP) standards that had been in effect previously. PM_{10} standards were substituted for TSP standards because PM_{10} corresponds to the size range of particulates that can be inhaled into the lungs and therefore is a better measure to use in assessing potential health effects. In 1987, USEPA also replaced national TSP standards with PM_{10} standards. PM_{10} levels in the South Coast Air Basin are nonattainment with respect to federal and state standards.

As discussed previously, the NAAQS for particulates were further revised by USEPA with new standards that went into effect on September 16, 1997; two new $PM_{2.5}$ standards were added at that time.

Tables 8.1-13, 8.1-14, and 8.1-15 show data for PM_{10} for 1996-2004 and the arithmetic annual averages for the same period. PM_{10} data were derived from the Perris, Banning, and Riverside Magnolia monitoring stations. Tables 8.1-16 and 8.1-17 present $PM_{2.5}$ information for the two nearest monitoring stations (1999-2004).

TABLE 8.1-13
PM$_{10}$ Levels at the Perris Monitoring Station, 1996-2004 (µg/m^3)

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Highest 24-hour value (Federal)	87	139	98	112	87	86	100	142	83
AAM	40	44.5	38.1	50	41.1	40.8	45.2	43.9	41.4
AGM	35.2	38.5	33.3	44	36.8	36	41.6	-	-
Number of days exceeding:									
State standard (50 µg/m^3, 24-hour)	20	19	14	30	13	16	24	17	15
Federal standard (150 µg/m^3, 24-hour)	0	0	0	0	0	0	0	0	0

Source: SCAQMD, CARB.

TABLE 8.1-14
PM$_{10}$ Levels at the Riverside Rubidoux Monitoring Station, 1996-2004 (µg/m^3)

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Highest 24-hour value (Federal)	162	163	116	153	139	136	130	164	137
AAM	61.1	64.9	56.2	72.3	60.1	63.1	58.5	55.6	54.8
AGM	52	56.3	48.7	64.9	54.7	54.3	53.4	55.1	53.5
Number of days exceeding:									
State standard (50 µg/m^3, 24-hour)	43	41	23	46	68	78	81	59	70
Federal standard (150 µg/m^3, 24-hour)	1	1	0	1	0	0	0	2	0

Source: SCAQMD, CARB.

TABLE 8.1-15
PM$_{10}$ Levels at the Banning Airport Monitoring Station, 1996-2004 (µg/m^3)

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Highest 24-hour value (Federal)	ND	ND	62	86	69	219	70	79	82
AAM	ND	ND	27	34.5	29.1	35.1	27.5	28.9	29.3
AGM	ND	ND	23.5	29.8	24.7	26.7	23.7	26.2	27.1
Number of days exceeding:									
State standard (50 µg/m^3, 24-hour)	ND	ND	2	4	5	7	6	1	3
Federal standard (150 µg/m^3, 24-hour)	ND	ND	0	0	0	1	0	0	0

Source: SCAQMD, CARB.

TABLE 8.1-16
$PM_{2.5}$ Levels at the Riverside Magnolia Monitoring Station, 1999-2004 (µg/m^3)

	1999	2000	2001	2002	2003	2004
Highest 24-hour value	90	79.3	74.9	75.5	73.3	93.8
Annual arithmetic mean (Federal standard = 15 µg/m^3)	26.9	25.5	28.3	27.1	22.6	20.8
Number of days exceeding:						
Federal standard (65 µg/m^3, 24-hour)	2	5	5	2	1	2

Source: SCAQMD, CARB.

TABLE 8.1-17
$PM_{2.5}$ Levels at the Riverside Rubidoux Monitoring Station, 1999-2004 (µg/m^3)

	1999	2000	2001	2002	2003	2004
Highest 24-hour value	111.2	119.6	98	77.6	104.3	91.7
Annual arithmetic mean (Federal standard = 15 µg/m^3)	30.9	28.2	31.1	27.5	24.8	22.1
Number of days exceeding:						
Federal standard (65 µg/m^3, 24-hour)	9	11	19	8	8	5

Source: SCAQMD, CARB.

8.1.1.3.9 Airborne Lead

Lead in the air results from the combustion of fuels that contain lead. Prior to 1975, motor vehicle gasoline contained relatively large amounts of lead compounds used as octane-rating improvers, and ambient lead levels were relatively high. Beginning with the 1975 model year, new automobiles began to be equipped with exhaust catalysts, which were poisoned by the exhaust products of leaded gasoline. Thus, unleaded gasoline became the required fuel for an increasing fraction of new vehicles, and the phase-out of leaded gasoline began. As a result, ambient lead levels decreased dramatically. Lead poisoning is a particularly insidious public health threat because there may be no unique signs or symptoms. Early symptoms of lead exposure may include persistent fatigue, irritability, loss of appetite, stomach discomfort, reduced attention span, insomnia, and constipation. Failure to treat lead poisoning in the early stages can cause long-term or permanent health damage, but because of the general nature of symptoms at early stages, lead poisoning is often not suspected. In adults, lead poisoning can cause irritability, poor muscle coordination, and nerve damage to the sense organs and nerves controlling the body. It may cause increased blood pressure, hearing and vision impairment, and reproductive problems (e.g., decreased sperm count). It also can retard fetal development even at relatively low levels. In children, lead poisoning can cause brain damage, mental retardation, behavioral problems, anemia, liver and kidney damage, hearing loss, hyperactivity, developmental delays, other physical and mental problems, and in extreme cases, death. Although the effects of lead exposure are a potential concern for all humans, young children (0 to 7 years old) are the most at risk.

Tables 8.1-18 and 8.1-19 list the state air quality standard for airborne lead and the levels recorded at the Riverside Magnolia and Rubidoux monitoring sites from 1996 through 2004. Maximum quarterly levels are well below the federal standard.

TABLE 8.1-18
Airborne Lead Levels at the Riverside Magnolia Monitoring Station 1996-2004 (μg/m^3)

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Highest quarterly average	0.03	0.04	0.05	0.05	0.04	0.03	0.02	0.03	0.02
Number of days exceeding:									
State standard (1.5 μg/m^3, monthly)	0	0	0	0	0	0	0	0	0

Source: SCAQMD, CARB.

TABLE 8.1-19
Airborne Lead Levels at the Riverside Rubidoux Monitoring Station 1996-2004 (μg/m^3)

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Highest quarterly average	0.04	0.04	0.04	0.06	0.06	0.04	0.03	0.03	0.05
Number of days exceeding:									
State standard (1.5 μg/m^3, monthly)	0	0	0	0	0	0	0	0	0

Source: SCAQMD, CARB.

Figures 8.1-4, 8.1-5, 8.1-6, and 8.1-7 show overall air quality trends in the South Coast Air Basin for CO, NO_2, PM_{10}, and ozone, respectively as delineated in the CARB 2005 Almanac of Emissions and Air Quality. Appendix 8.1B contains figures which show the location for the various monitoring sites referenced above.

8.1.2 Environmental Consequences

This section discusses the environmental consequences of the operation and construction of the SVEP, in terms of air quality. It describes the methodology for modeling the project's air emissions, and presents an analysis of air quality impacts from operation and construction. This section also discusses the screening level human health risk assessment described in greater detail in Section 8.9, Public Health, and discusses specialized modeling analyses that include fumigation modeling, modeling of turbine startups and shutdowns, turbine commissioning, and pre-construction monitoring.

Appendix G, Environmental Checklist Form, of CEQA addresses significance criteria with respect to air quality (Public Resources Code Sections 21000 et seq.). Appendix G (V)(a,b,d) indicates that an impact would be significant in terms if the project would:

- Conflict with or obstruct implementation of the applicable air quality plan?
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation

- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?
- Expose sensitive receptors to substantial pollutant concentrations?

8.1.2.1 Overview of the Analytical Approach to Estimating Facility Impacts

The emissions sources at SVEP include five gas turbines, diesel-fired fire pump, and a wet mechanical-draft cooling tower. The actual operation of the turbines will be a combination of peaking and intermediate service. A chilled inlet air system will also be used to increase power output under certain conditions. Emission control systems will be fully operational during all operations except during brief periods upon startup and shutdown. Maximum annual emissions are based on operation of the SVEP at maximum firing rates and include the expected maximum number of startups that may occur in a year. Each turbine startup will result in transient emission rates until steady-state operation for the gas turbine and emission control systems is achieved.

Ambient air quality impact analyses for the site have been conducted to satisfy the CEC requirements for criteria pollutants (NO_2, CO, PM_{10}, and SO_2), noncriteria pollutants, and construction impacts have been addressed on a pollutant-specific basis. It should be noted that the operational scenarios having the highest emissions rates do not necessarily produce the highest ambient impacts. The following sections describe the emission sources that have been evaluated for the SVEP, the ambient impact analyses results, and the evaluation of facility compliance with the applicable air quality regulations, including SCAQMD Regulation II (Permits), and Rule XIII (New Source Review), and the PSD requirements per EPA Region IX.

Two basic emissions scenarios were developed for this application. The first scenario is based on the expected annual and monthly operating profiles for use in establishing emission limits for SCAQMD NSR permit, for RECLAIM, and for the monthly ERCs. This scenario assumed 3,200 hours of base load with 350 startup/shutdowns for a total of 3,468 hours on a annual basis. For the monthly ERCs, the worst-case month was assumed to be based on 432 hours with 40 startup/shutdowns.

The second scenario was used only as a hypothetical worst-case assessment for the air quality and health risk modeling analysis. This scenario was based on a worst-case estimate of potential emissions that assumed extended hours of operation as well as including the use of an emergency generator. This scenario was only used for the air quality/toxics modeling impact assessments as it represented a maximum envelope for which the facility could be expected to operate. This emissions/modeling scenario assumed worst-case short-term and annual emissions based on 4,000 hours of operation with 838 hours of startup/shutdown, for a total of 4,838 hours. Modeling a much higher emissions case than what is proposed to be permitted provides a worst-case impact assessment.

In both scenarios, the maximum short-term emission rates are the same. Specifically, the maximum 1-hour, 3-hour, 8-hour, and 24-hour emissions assumes 20 hours of base load with 4 hours in startup/shutdown for a total of 24-hours of daily (short-term) operation.

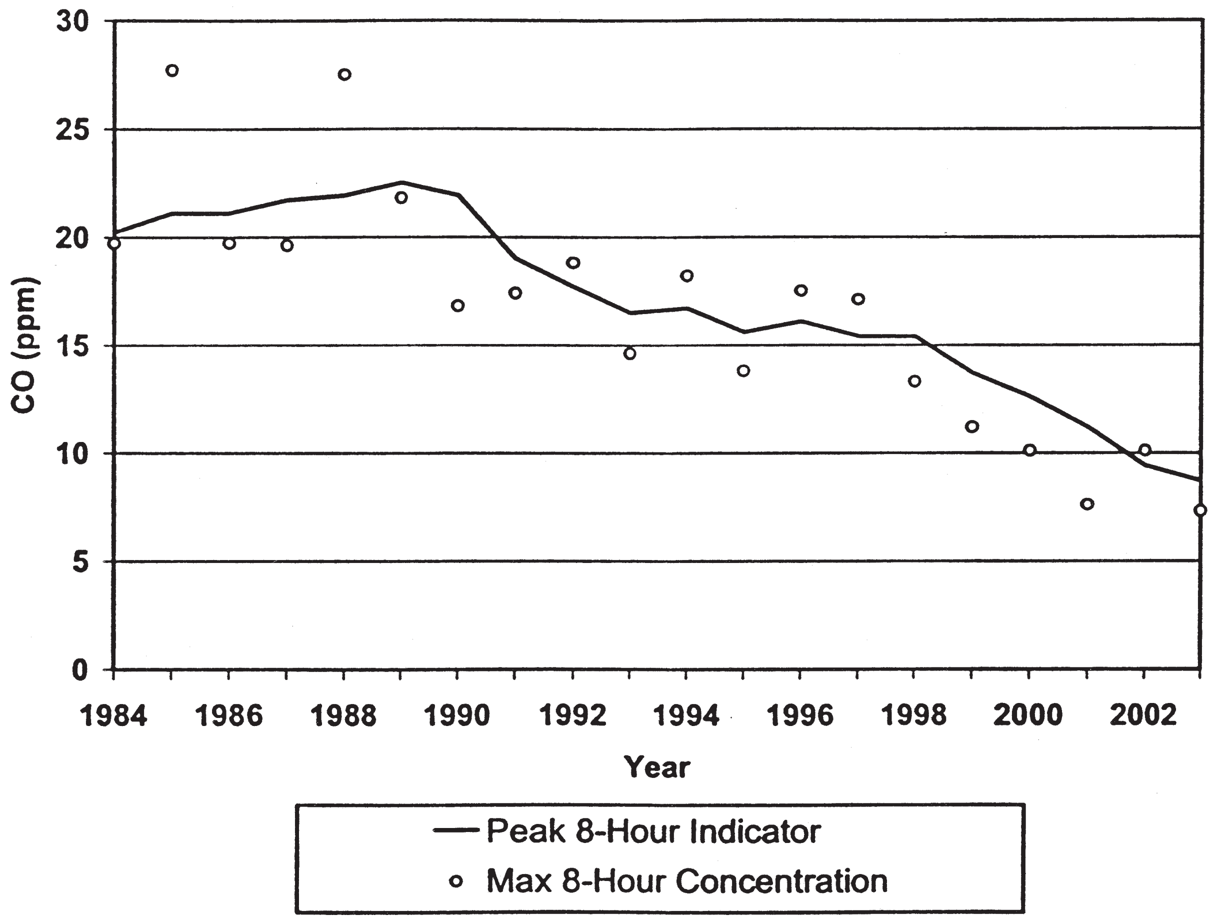

FIGURE 8.1-4
SOUTH COAST AIR BASIN - CARBON MONOXIDE TREND 1984-2002
SUN VALLEY ENERGY PROJECT
ROMOLAND, CALIFORNIA

CH2MHILL

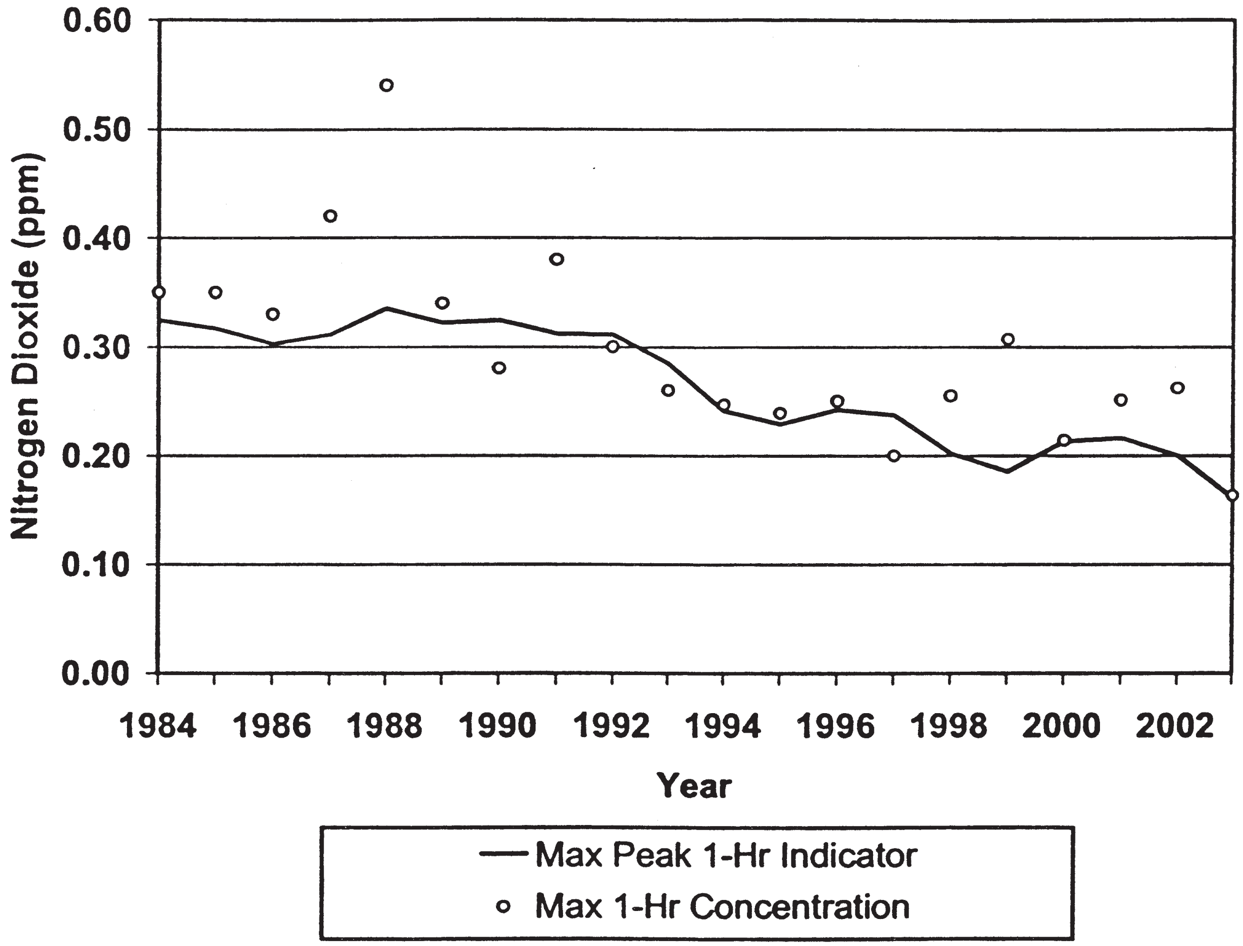

FIGURE 8.1-5
SOUTH COAST AIR BASIN - NITROGEN DIOXIDE TREND 1984-2002
SUN VALLEY ENERGY PROJECT
ROMOLAND, CALIFORNIA

CH2MHILL

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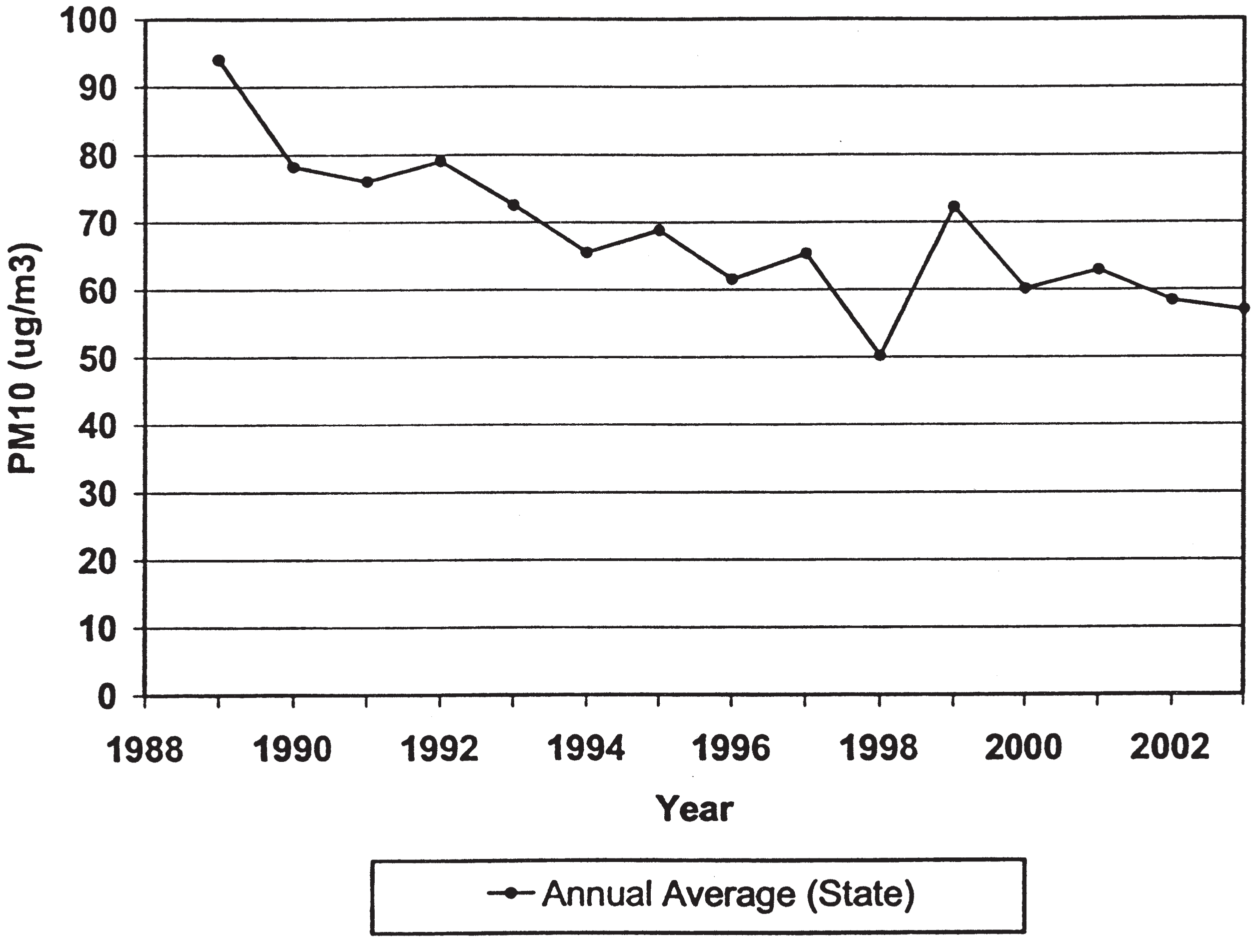

FIGURE 8.1-6
SOUTH COAST AIR BASIN - PM_{10} TREND 1988-2002
SUN VALLEY ENERGY PROJECT
ROMOLAND, CALIFORNIA

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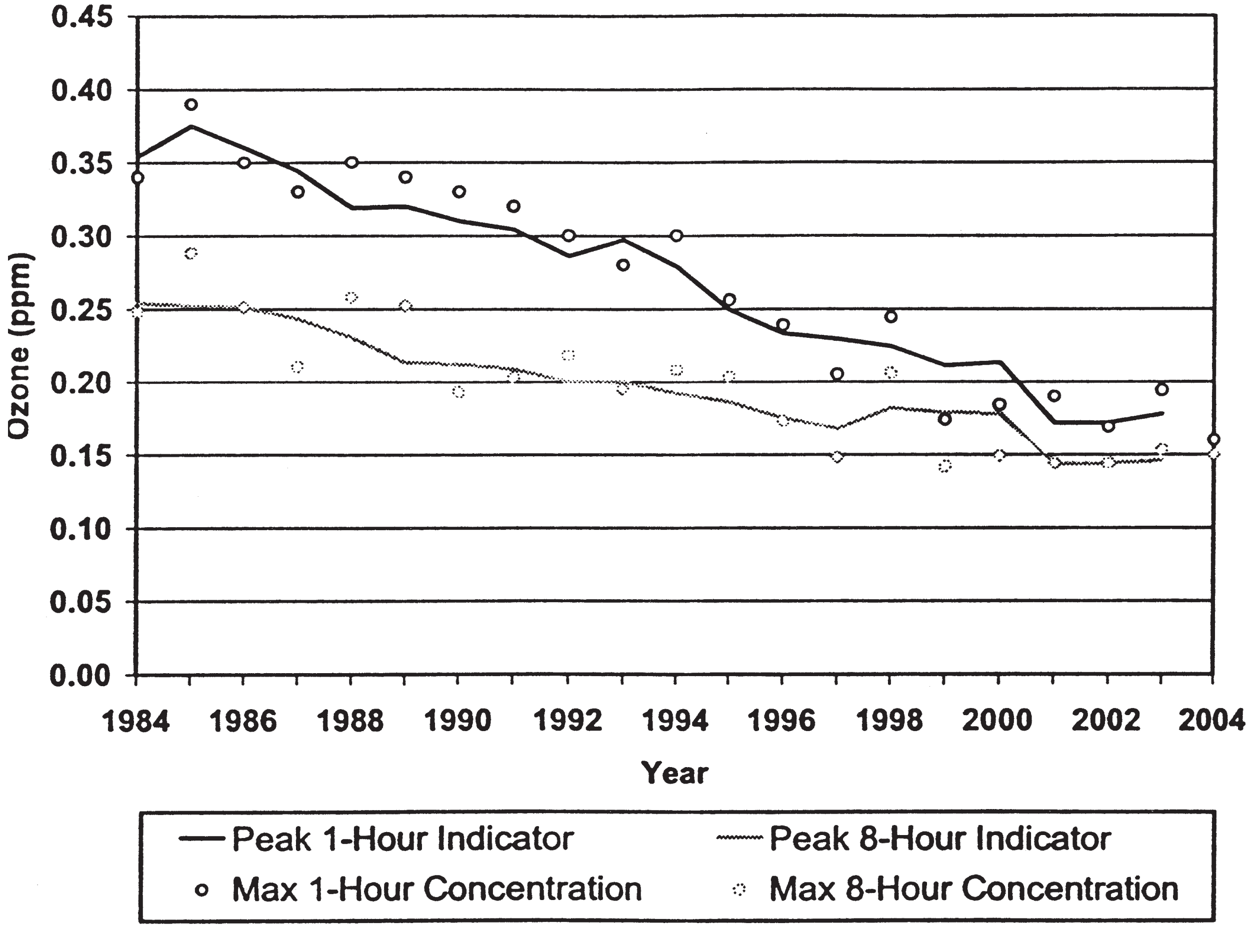

FIGURE 8.1-7
SOUTH COAST AIR BASIN - OZONE TREND 1984-2004
SUN VALLEY ENERGY PROJECT
ROMOLAND, CALIFORNIA

CH2MHILL

Various resource planning processes throughout California are currently estimating the need for capacity in Southern California. Although the applicant expects to permit and operate the SVEP in accordance with the first scenario, modeling the worst-case would allow for future modifications without redoing the modeling impact assessment, should there be a power crisis and the need for peaking capacity exceeded the permitted scenario.

8.1.2.2 Facility Emissions

The proposed project will be a new source. As discussed in Section 2, the new equipment will consist of five GE LMS100 combustion turbines (or equivalent), rated at 100 MW each (nominal net, at site design conditions); a diesel fired fire pump, and a 5-cell cooling tower. Natural gas will be the only fuel consumed during normal operation of the SVEP. Diesel fuel will be used only in the IC engine (fire pump). Typical specifications for the natural gas fuel are shown in Table 8.1-20. A standard analysis of diesel fuel is presented in Appendix 8.1A.

The turbine design specifications are as follows (each turbine):

Manufacturer	General Electric
Model	LMS 100
Fuel	Natural Gas
Nominal heat input	~860.0-900.0 MMBtu/hr (HHV)
Nominal power generation	~100 MW
Turbine exhaust temperature	~740-800°F
Exhaust flow	~ 899,250 – 1,709,395 lb/hr
Exhaust O_2 %	~12 – 15% (wet)
Exhaust CO_2 %	~ 5.1 – 6.4% (wet)
Exhaust moisture %	~ 6 - 8%

The cooling tower design specifications are as follows:

Manufacturer	Marley (or equivalent)
Number of cells	5 (plume-abated counterflow design)
Cell ACFM	~ 883,000
Drift rate	0.0005%
Maximum TDS	5,000 ppmw (at 7.4 cycles of concentration)
Tower circulation rate	~ 35,500 gpm
Dimensions	210.7 ft length, 36.7 ft width, 39.1 ft height
Fan Deck height	27.1 ft

The fire pump engine specifications are as follows:

Manufacturer	Clarke (or equivalent)
Bhp	300
Fuel	Diesel #2, w/0.05% sulfur by wt.
Fuel Consumption	14.5 gals/hr
Exhaust Temperature	738°F
Exhaust Flow	2058 acfm
Stack Height	40 ft
Stack Diameter	5 in.

Natural gas combustion results in the formation of NO_x, SO_2, unburned hydrocarbons (VOC), PM_{10}, $PM_{2.5}$, and CO. Because natural gas is a clean burning fuel, there will be minimal formation of combustion PM_{10}, $PM_{2.5}$, and SO_2. All emissions of PM were assumed to be either PM_{10} or $PM_{2.5}$. The combustion turbines will be equipped with standard combustors that minimize the formation of NO_x and CO. To further reduce NO_x and CO emissions, selective catalytic reduction (SCR) and oxidation catalyst control systems will be utilized.

TABLE 8.1-20
Typical Chemical Characteristics and Heating Value of Natural Gas.

Constituent	Mole %
Nitrogen	0.862
CO_2	0.047
Methane	98.950
Ethane	0.095
Oxygen	0.047
Total	99.998
Specific gravity	0.559
High Heat Value (HHV)	1,056 Btu/scf

Various noncriteria pollutants will also be emitted by the facility, including ammonia (NH_3), which is used as a reactant by the SCR system to control NO_x, and very minute amounts of sulfate (or secondary particulate matter) due to the oxidation of the SO_2 emitted by the facility. Emissions of all of the criteria and noncriteria pollutants have been characterized and quantified in this application.

8.1.2.2.1 Criteria Pollutant Emissions

The gas turbines emission rates have been estimated from vendor data, SVEP design criteria, and established emission calculation procedures. The emission rates for the combustion turbines (short- and long-term emission rates) are shown in Tables 8.1-21, and 8.1-22, respectively.

The maximum firing rates, daily and annual fuel consumption rates, and operating restrictions define the allowable operations that determine the maximum potential hourly, daily, and annual emissions for each pollutant. These allowable operations are typically referred to as “the operating envelope” for a facility. The maximum heat input rates (fuel consumption rates) for the gas turbines, are shown in Table 8.1-23.

Maximum emission rates expected to occur during a startup or shutdown are shown in Table 8.1-24. PM_{10}, $PM_{2.5}$, and SO_2 emissions have not been included in this table because emissions of these pollutants will be lower during a startup or shutdown period than during baseload facility operation.

TABLE 8.1-21
Maximum Short-Term Pollutant Emission Rates—Each Turbine

Pollutant	ppmvd @ 15% O_2[b]	lb/hr[b]
NO_x	2.5[a]	8.1
CO	6.0[a]	11.8
VOC	2.0[a]	2.21
$PM_{10}/PM_{2.5}$[c]	-	6.0
SO_2[d]	0.120	0.62
NH_3	5.0	4.91

[a] SVEP design criteria.
[b] Pounds per hour and ppm provided by vendor
[c] 100 percent of particulate matter emissions assumed to be emitted as PM_{10} and $PM_{2.5}$. $PM_{10}/PM_{2.5}$ emissions include both front and back half as those terms are used in USEPA Method 5.
[d] Based on maximum fuel sulfur content of 4 ppmv, 0.25 gr/100 scf.

TABLE 8.1-22
Maximum Long-Term Pollutant Emission Rates

Pollutant	lb/Day[a] Per Turbine	lb/Month[b] Per Turbine	Tons per Year Turbines Only
NO_x	200.8	3823.7	74.5
CO	326.8	6233.8	124.0
VOC	56.0	1067.1	21.0
$PM_{10}/PM_{2.5}$	141.2	2686.5	52.0
SO_2	14.6	277.6	5.5
NH_3	117.8	2198.4	48.0

[a] Daily emissions are based on 22 hours at base load and 1.5 hours in startup/shutdown. Annual based on 3,468 hours.
[b] 31 day month adjusted for SCAQMD 30 day average month.

TABLE 8.1-23
Maximum Device Heat Input Rates (HHV) (MMBtu)

Period	Each Gas Turbine[a]	All Gas Turbines[b]
Per hour	8.92E+02	4.46E+03
Per day	2.14E+04	1.07E+05
Per year	3.09E+06	1.55E+07

[a] Based on maximum heat input for full load operation at 59°F
[b] Based on maximum heat input for full load turbine operation at 59°F.

Daily and annual heat input rates are highly variable due to the wide capability of the turbines to operate at various loads on a daily and annual basis. Annual based on 3,468 hours.

Natural gas at 1,000 Btu/scf (HHV), see App 8.1A for approximate fuel use calculations at 1,056 Btu/scf.

TABLE 8.1-24
Maximum Facility Startup/Shutdown Emission Rates*

	NO_x	CO	VOC
Startup, lb/event	7.0	15.4	2.1
Shutdown, lb/event	4.3	18.2	1.6

* Estimated based on vendor data at ISO of 59°F. See Appendix 8.1A.

The analysis of maximum facility emission levels was based on the pollutant emission rates shown in Tables 8.1-21 through 8.1-24; the SVEP operating envelope shown in Appendix 8.1A; and the ambient conditions that result in the highest emission rates. The maximum annual, daily, and hourly emissions for SVEP are shown in Table 8.1-25. Detailed emission calculations appear in Appendix 8.1A. Emissions from the cooling tower were calculated from the predicted cooling water TDS level at 7.4 cycles of concentration (see Appendix 8.1A). Emissions from the fire pump are delineated in Appendix 8.1A. At this time, an emergency generator is not proposed for this site.

TABLE 8.1-25
Emissions from New Equipment[a]

	NO_x	SO_2	CO	VOC	$PM_{10}/PM_{2.5}$
Maximum Hourly Emissions, lb/hr					
Turbines[b]	40.5	3.1	91	11.1	30.0
Fire Pump Engine	3.4	0.004	0.2	0.1	0.06
Cooling tower	-	-	-	-	0.444
Total Project, pounds per hour[c]	**43.9**	**3.104**	**91.2**	**11.2**	**30.5**
Maximum daily emissions, lb/day					
Turbines[b]	1,004.0	73.0	1634	280	706
Fire Pump Engine	3.4	0.004	0.2	0.1	0.06
Cooling tower	-	-	-	-	10.7
Total project, pounds per day[c]	**1,007.4**	**73.01**	**1634.2**	**280.1**	**716.8**
Maximum Monthly Emissions, lb/month[d]					
Turbines	19,118.5	1,388	31,169	5,335.5	13,432.5
Fire Pump Engine	16.6	0.02	0.5	0.5	0.3
Cooling tower	-	-	-	-	319.7
Total Monthly Emissions, lbs.	**19,135.1**	**1,388.02**	**31,169.5**	**5,336**	**13,752.5**
Maximum Annual Emissions[c], tons	**74.8**	**5.4**	**123.8**	**20.9**	**52.9**

[a] See Appendix 8.1A for calculations.
[b] Includes startup/shutdown emissions with 22 hours of base operation and 1.5 hours of startup/shutdown.
[c] Based on 3,468 hours of operation with 350 startups and 350 shutdowns.
[d] SCAQMD average month (30 day) emissions per Rule 1306(b).

8.1.2.2.2 Construction Emissions

Emissions due to the construction phase of the project have been estimated, including an assessment of emissions from vehicle and equipment exhaust and the fugitive dust generated from material handling. A detailed analysis of the emissions and ambient impacts is included in Appendix 8.1E. Construction emissions mitigation and/or control techniques proposed for use at the SVEP site, include, but are not limited to the following:

- Operational measures, such as limiting time spent with the engine idling by shutting down equipment when not in use;
- Regular preventive maintenance to prevent emission increases due to engine problems;
- Use of low sulfur and low aromatic fuel meeting California standards for motor vehicle diesel fuel; and
- Use of low-emitting gas and diesel engines meeting state and federal emissions standards for construction equipment, including, but not limited to catalytic converter systems and particulate filter systems.

The following mitigation measures are proposed to control fugitive dust emissions during construction of the project:

- Use either water application or chemical dust suppressant application to control dust emissions from on-site unpaved road travel and unpaved parking areas;
- Use vacuum sweeping and/or water flushing of paved road surface to remove buildup of loose material to control dust emissions from travel on the paved access road (including adjacent public streets impacted by construction activities) and paved parking areas;
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two ft of freeboard;
- Limit traffic speeds on all unpaved site areas to 5 mph;
- Install sandbags or other erosion control measures to prevent silt runoff to roadways;
- Replant vegetation in disturbed areas as quickly as possible;
- Use wheel washers or wash off tires of all trucks exiting construction site; and
- Mitigate fugitive dust emissions from wind erosion of areas disturbed from construction activities (including storage piles) by application of either water or chemical dust suppressant.

The SVEP construction site impacts are not unusual in comparison to most construction sites. Construction sites that use good dust suppression techniques and low-emitting vehicles typically do not cause violations of air quality standards.

8.1.2.2.3 Noncriteria Pollutant Emissions

Noncriteria pollutant emission factors were used for the analysis of emissions from the gas turbines. These factors were taken from data compiled by the California Air Toxics Emission Factors (CATEF) database, and from data presented in recent AFCs for similar sized turbines. Noncriteria pollutant emissions from the cooling tower were calculated from an analysis of the proposed reclaim water as delivered to the cooling tower system (assuming 7.4 cycles of concentration).

The noncriteria pollutants that may be emitted from the SVEP, and their respective emission factors, are shown in Table 8.1-26. Appendix 8.1A provides the detailed emission calculations for noncriteria pollutants.

TABLE 8.1-26
Noncriteria Pollutant Emissions for the SVEP

Pollutant	Emission Factor	Emissions	
		lb/hr	ton/yr
Gas Turbines (each):	**(lb/MMscf)**		
Acetaldehyde	4.08×10^{-2}	3.61E-02	8.86E-02
Acrolein	3.69×10^{-3}	3.26E-03	8.01E-03
Ammonia (NH_3)	-[a]	4.91	11.9
Benzene	3.33×10^{-3}	2.94E-03	7.23E-03
1,3-Butadiene	1.27×10^{-4}	1.12E-04	2.76E-04
Ethylbenzene	1.79×10^{-2}	1.58E-02	3.89E-02
Formaldehyde	1.10×10^{-1}	9.72E-02	2.39E-01
Hexane	2.59×10^{-1}	2.29E-01	5.62E-01
Naphthalene	1.33×10^{-3}	1.18E-03	2.89E-03
Polycyclic Aromatics	1.65×10^{-4}	1.46E-04	3.58E-04
Propylene	7.70×10^{-1}	6.80E-01	1.67E+00
Propylene oxide	2.96×10^{-2}	2.62E-02	6.43E-02
Toluene	7.10×10^{-2}	6.27E-02	1.54E-01
Xylene	2.61×10^{-2}	2.31E-02	5.67E-02
Cooling Tower (all cells)[b]	**(ppmw)**		
Arsenic	0.0163	7.22E-09	1.75E-08
Cadmium	0.00044	1.97E-10	4.77E-10
Chromium (total)	0.0348	1.54E-08	3.73E-08
Copper	0.037	1.64E-08	3.97E-08
Lead	0.0023	1.15E-09	2.78E-09
Mercury	0.00035	1.55E-10	3.74E-10
Nickel	0.103	4.56E-06	1.10E-07
Silver	0.0044	1.97E-09	4.77E-09
Zinc	1.04	4.60E-07	1.11E-06

[a] Ammonia emissions calculated from ammonia slip rate. See Appendix 8.1A
[b] Cooling tower data based on recycle/reclaim water use, 7.4 cycles of concentration.

Turbine emissions based on the 4,000 hr/yr modeling scenario rather than the 3,468 hr/yr proposed limit, see Table 8.1A-2B.

Emissions for the IC engine are delineated in Appendix 8.1A.

8.1.2.3 Air Quality Impact Analysis

8.1.2.3.1 Air Quality Modeling Methodology

An assessment of impacts from the SVEP on ambient air quality was conducted using USEPA-approved air quality dispersion models along with the worst-case emissions profile as described earlier. These models are based on various mathematical descriptions of atmospheric diffusion and dispersion processes in which a pollutant source impact can be calculated over a given area.

The impact analysis was used to determine the worst-case ground-level impacts of the SVEP. It should be noted that the operational scenarios having the highest emissions rates do not necessarily produce the highest ambient impacts. The results were compared with established state and federal ambient air quality standards and PSD significance levels. If the standards are not exceeded then it is assumed that, in the operation of the facility, no exceedances are expected under any conditions. In accordance with the air quality impact analysis guidelines developed by SCAQMD, USEPA (40 CFR Part 51, Appendix W: *Guideline on Air Quality Models and CARB Reference Document for California Statewide Modeling Guideline*, April 1989), the ground-level impact analysis includes the following assessments:

- Impacts in simple, intermediate, and complex terrain,
- Aerodynamic effects (downwash) due to nearby building(s) and structures, and
- Impacts from inversion breakup (fumigation).

Simple, intermediate and complex terrain impacts were assessed for all meteorological conditions that would limit the amount of final plume rise. Plume impaction on elevated terrain, such as on the slope of a nearby hill, can cause high ground-level concentrations, especially under stable atmospheric conditions. Another dispersion condition that can cause high ground-level pollutant concentrations is caused by building downwash. Building downwash can occur when wind speeds are high and a building or structure is in close proximity to the emission stack. This can result in building wake effects where the plume is drawn down toward the ground by the lower pressure region that exists in the lee side (downwind) of the building or structure.

Fumigation conditions occur when the plume is emitted into a low lying layer of stable air (inversion) that then becomes unstable, resulting in a rapid mixing of pollutants towards the ground. The low mixing height that results from this condition allows little diffusion of the stack plume before it is carried downwind to the ground. Although fumigation conditions rarely last as long as an hour, relatively high ground-level concentrations may be reached during that period. Fumigation tends to occur under clear skies and light winds. Such conditions are more prevalent during the summer months.

The basic model equation used in this analysis assumes that the concentrations of emissions within a plume can be characterized by a Gaussian distribution about the centerline of the plume (see Figure 8.1-8). Concentrations at any location downwind of a point source such as a stack can be determined from the following equation:

$$C(x, y, z, H) = \left(\frac{Q}{2\pi \sigma_y \sigma_z u}\right) * \left(e^{-1/2\left(y/\sigma_y\right)^2}\right) * \left[\left\{e^{-1/2\left(z-H/\sigma_z\right)^2}\right\} + \left\{e^{-1/2\left(z+H/\sigma_z\right)^2}\right\}\right]$$

where:

C	=	the concentration in the air of the substance or pollutant in question
Q	=	the pollutant emission rate
σyσz	=	the horizontal and vertical dispersion coefficients, respectively, at downwind distance x
u	=	the wind speed at the height of the plume center
x, y, z	=	the variables that define the 3-dimensional Cartesian coordinate system used; the downwind, crosswind, and vertical distances from the base of the stack (see Figure 8.1-8)
H	=	the height of the plume above the stack base (the sum of the height of the stack and the vertical distance that the plume rises due to the momentum and/or buoyancy of the plume)Figure 8.1-8

Gaussian Plume

Gaussian dispersion models are approved by USEPA for regulatory use and are based on conservative assumptions (i.e., the models are designed to overpredict actual impacts by assuming steady state conditions, no pollutant loss through conservation of mass, no chemical reactions, etc.). The USEPA models were used to determine if ambient air quality standards would be exceeded, and whether a more accurate and sophisticated modeling procedure would be warranted to make the impact determination. The following sections describe:

- Screening modeling procedures
- Refined air quality impact analysis
- Existing ambient pollutant concentrations and pre-construction monitoring
- Results of the ambient air quality modeling analyses

The screening and refined air quality impact analyses were performed using the Industrial Source Complex, Short-Term Model ISCST3 (Version 02035). ISCST3 is a Gaussian dispersion model capable of assessing impacts from a variety of source types in areas of simple, intermediate, and complex terrain. The model can account for settling and dry deposition of particulates; area, line, and volume source types; downwash effects, and gradual plume rise as a function of downwind distance. The model is capable of estimating concentrations for a wide range of averaging times (from 1 hour to 1 year).

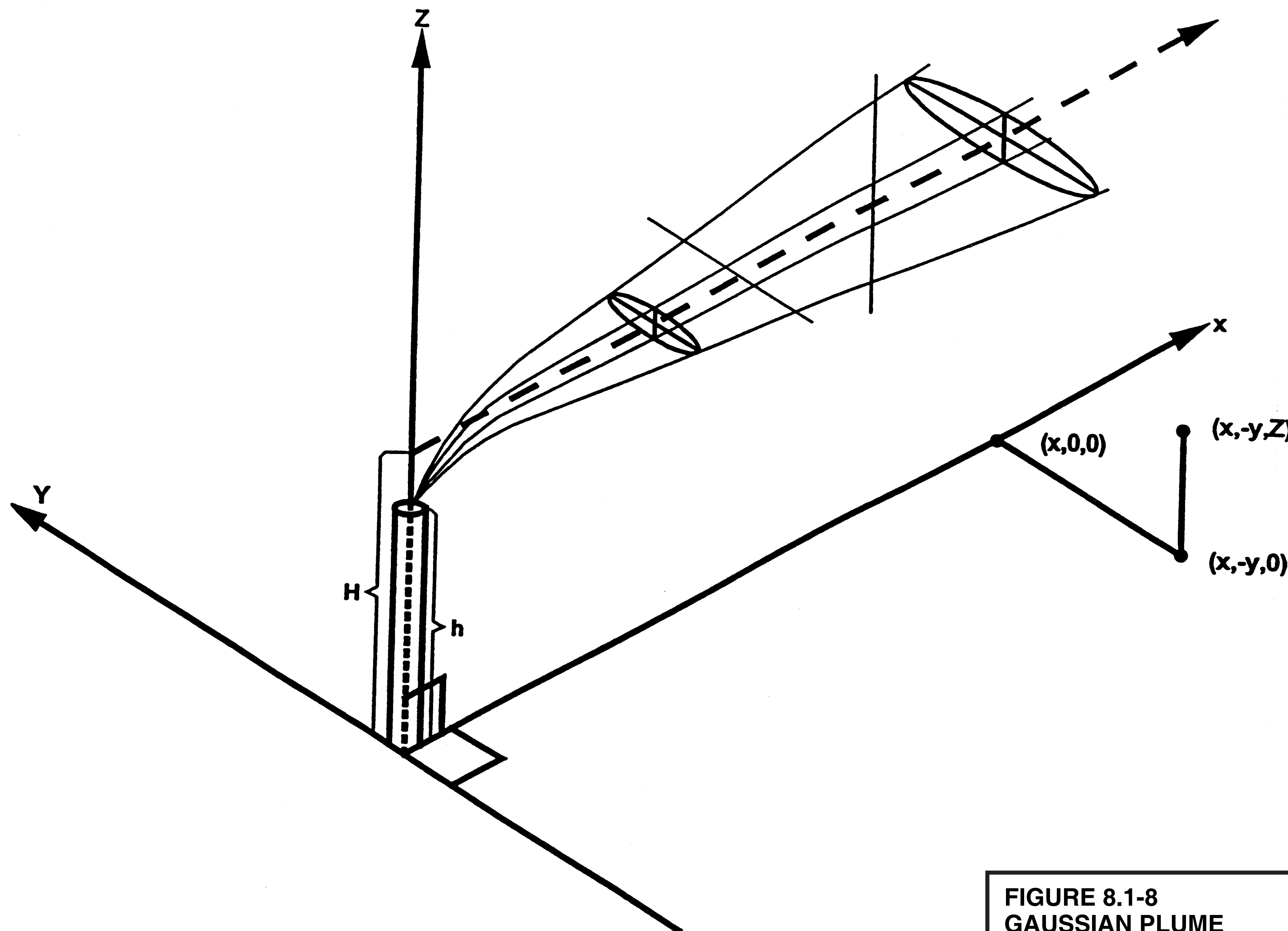

FIGURE 8.1-8
GAUSSIAN PLUME
COORDINATE SYSTEM
SUN VALLEY ENERGY PROJECT
ROMOLAND, CALIFORNIA

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Inputs required by the ISCST3 model include the following:

- Model options
- Meteorological data
- Source data
- Receptor data

Model options refer to user selections that account for conditions specific to the area being modeled or to the emissions source that needs to be examined. Examples of model options include use of site-specific vertical profiles of wind speed and temperature; consideration of stack and building wake effects; and time-dependent exponential decay of pollutants. The model supplies recommended default options for the user. Except where explicitly stated, such as for building downwash as described in more detail below, default values were used. A number of these default values are required for USEPA and local District approval of model results and are listed below:

- Rural dispersion coefficients
- Stack tip downwash
- Buoyancy induced dispersion
- No Calm processing
- Default rural wind profile exponents
- Default rural vertical temperature gradients
- 10 meter anemometer height (Riverside)

ISCST3 uses hourly meteorological data to characterize plume dispersion. The representativeness of the data is dependent on the proximity of the meteorological monitoring site to the area under consideration; the complexity of the terrain, the exposure of the meteorological monitoring site, and the period of time during which the data are collected. The meteorological data set used in this analysis was determined to be representative of meteorological conditions at the SVEP site and to meet the requirements of the USEPA "On-Site Meteorological Program Guidance for Regulatory Model Applications" (EPA-450/4-87-013, August 1995). The data were collected by the SCAQMD during 1981, at the Riverside monitoring station approximately 33.4 kilometers northwest of the project site.

In determining the representativeness of the Riverside monitoring station relative to the project site, the following considerations were addressed:

- **Aspect ratio of terrain, which is the ratio of height to width of hill at base**—The major terrain features that are located adjacent to the project site are the same terrain features that are located near the Riverside monitoring station. The area is characterized by several northwest-southeast oriented valley's with complex terrain located to the east, south and west. Localized upslope and downslope wind fields immediately adjacent to the terrain would not be expected. Any larger scale upslope/downslope flow from the more significant terrain features surrounding the project site would are identified on the Riverside meteorological data set and would be representative of the project site.

- **Slope of terrain** – The same large scale terrain features near the project site are similar to those in the areas surrounding the Riverside monitoring station.

- **Ratio of terrain height to stack/plume height** – Terrain above the stack height is located at least 1.5 kilometers or more from the project site towards the south and 2.5 kilometers towards the north. Terrain extends up to 500 ft above the project site elevation (stack base) towards the south. Towards the east, terrain extends up to 1,500 ft above stack base. Final plume height (stack base plus plume rise) was calculated for D stability, 5 meter/second wind speed to be 756 ft (85-foot stack plus 671-foot plume rise). At this final height, the ratios of terrain height to stack height are consistent along the length of the Perris Valley and the plume would disperse in an identical manner to the dispersion conditions monitored at the Riverside monitoring station.
- **Correlation of terrain features to prevailing meteorological conditions—**The orientation and aspect of terrain in the project area correlates well with the prevailing wind fields as identified by the Riverside meteorological data. The daily land-sea breeze, while weakened by frictional effects of distance and intervening terrain, is channeled through the Perris Valley by the large scale northwest/southeast oriented Santa Ana Mountains and The Badlands. Thus, wind flow at the Riverside monitoring station would be similar to the project site since both sites are situated within this broadscale valley.

Thus, it is our assessment that the meteorological data collected at the Riverside monitoring station are identical to the dispersion conditions at the project site and to the regional area. The windroses do not indicate any overwhelming effects on the potential dispersion of pollutants from the project site on a regional scale from influences other than the general influence of the large-scale South Coast Basin. Thus, the data set would satisfy the definition of on-site data, as defined in the PSD Monitoring Guidelines (1990) and the On-site Meteorological Program Guidance for Regulatory Modeling Applications (1987).

The one (1) year of meteorological data for the Riverside monitoring station was obtained from the SCAQMD for the year 1981. The data set includes all the necessary parameters required for the ISCST3 dispersion modeling analyses (i.e., wind speed and direction, temperature, stability, and mixing height). The data was not modified in any way.

Land use in the immediate area surrounding the project site can be characterized as rural as areas within three (3) kilometers of the project site are classified as predominately rural, made up mostly of undeveloped land. In accordance with the Auer land use classification methodology (USEPA's "*Guideline on Air Quality Models*"), land use within the area circumscribed by a three-kilometer radius around the facility is greater than 50 percent rural. Therefore, in the modeling analyses supporting the permitting of the facility, rural coefficients were assigned.

The required emission source data inputs to ISCST3 include source locations, source elevations, stack heights, stack diameters, stack exit temperatures and velocities, and emission rates. The source locations are specified for a Cartesian (x, y) coordinate system where x and y are distances east and north in meters, respectively. The Cartesian coordinate system used is the Universal Transverse Mercator (UTM) Projection, North American Datum (NAD27). The stack height that can be used in the model is limited by federal and SCAQMD Good Engineering Practice (GEP) stack height restrictions, discussed in more detail below. In addition, ISCST3 requires nearby building dimension data to calculate the impacts of building downwash.

For the purposes of modeling, a stack height beyond what is required by Good Engineering Practices is not allowed. However, this requirement does not place a limit on the actual constructed height of a stack. GEP as used in modeling analyses is the height necessary to ensure that emissions from the stack do not result in excessive concentrations of any air pollutant in the immediate vicinity of the source as a result of atmospheric downwash, eddies, or wakes that may be created by the source itself, nearby structures, or nearby terrain obstacles. In addition, the GEP modeling restriction assures that any required regulatory control measure is not compromised by the effect of that portion of the stack that exceeds the GEP. The USEPA guidance ("Guideline for Determination of Good Engineering Practice Stack Height," Revised 6/85) for determining GEP stack height is as follows:

$$H_g = H + 1.5L$$

where

H_g = Good Engineering Practice stack height, measured from the ground-level elevation at the base of the stack

H = height of nearby structure(s) measured from the ground-level elevation at the base of the stack

L = lesser dimension, height or maximum projected width, of nearby structure(s)

In using this equation, the guidance document indicates that both the height and width of the structure are determined from the frontal area of the structure, projected onto a plane perpendicular to the direction of the wind.

GEP stack height was calculated at 97 ft, based on the maximum on-site structure height of 48 ft. The proposed stack height of 90 ft does not exceed GEP stack height.

For regulatory applications, a building is considered sufficiently close to a stack to cause wake effects when the downwind distance between the stack and the nearest part of the building is less than or equal to five times the lesser of the height or the projected width of the building.

For the buildings analyzed as downwash structures, the building dimensions were obtained from building site plans obtained from the project plot plan. The building dimensions were analyzed using the Building Profile Input Program (BPIP) to calculate 36 wind-direction-specific building heights and projected building widths for use in building wake calculations. The building dimensions used in the GEP analysis are shown in Appendix 8.1B.

8.1.2.3.2 Screening Procedures

To ensure the impacts analyzed were for maximum emission levels and worst-case dispersion conditions, a screening procedure was used to determine the inputs to the impact modeling. The screening procedure analyzed the turbine operating conditions that would result in the maximum impacts on a pollutant-specific basis. The operating conditions examined in this screening analysis, along with their exhaust and emission characteristics, are shown in Appendix 8.1B. These operating conditions represent maximum and minimum turbine loads (100 percent down to 50 percent) at average, maximum, and minimum ambient operating temperatures (30°F, 59°F, 84 °F and 110°F).

The operating conditions were screened for worst-case ambient impacts using USEPA's ISCST3 model and SCAQMD worst case year of meteorological data collected at the Riverside monitoring station, as described above. The results of the screening procedure are presented in Appendix 8.1B. The screening analysis showed that the maximum one-hour NO_x impact as well as the 1-and 8-hour CO impacts occurred under Case 10. The 24-hour PM_{10} impact occurred under Case1, and the maximum SO_2 impacts (all averaging times) occurred under Case 3. The stack parameters for these turbine operating conditions were then used in the refined modeling analyses to evaluate the modeled impacts of the entire project for each pollutant and the aforementioned averaging periods.

A screening analysis was also performed for the emergency equipment (fire pump and generator), although at this time, the emergency generator is not proposed to be used at the site. However, to determine the potential for worst-case impacts, the generator was included in the air quality modeling assessment. This way, if the emergency generator is proposed at a later date, then the air quality modeling will not need to be revised. The unit with the highest emission rate does not always produce the largest impacts since the stack characteristics and source location can influence the final modeled concentration. Therefore, a screening analysis was performed and the emergency generator produced the largest impacts for all pollutants (24-hours and less).

The screening analysis included flat, simple, intermediate, and complex terrain. Terrain features were taken from 1-second USGS DEM data and 7.5-minute quadrangle maps of the area. For the screening analysis, a coarse Cartesian grid of receptors spaced at 180 meters was used with a finer downwash grid, spaced at 30 meters, beginning at the SVEP fenceline. The coarse grid extended over 10 kilometers from the SVEP in all directions; the downwash grid extended to between 400 and 500 meters from the fenceline.

8.1.2.4 Results of the Ambient Air Quality Modeling Analysis

8.1.2.4.1 Refined Air Quality Impact Analysis

The operating conditions and emission rates used to model the SVEP are summarized in Table 8.1-27. As discussed above, the turbine stack parameters for Cases 1, 3, and 10 were used in modeling the impacts for each pollutant and averaging period. The complete modeling input for each pollutant and averaging period is shown in Appendix 8.1B. The emissions used for modeling the worst-case impacts were based on maximum short-term emissions that assumed the highest hourly pollutant rates based on either load, temperature, or whether the turbine was in a startup/shutdown cycle. For the daily emissions, it was assumed that the turbine would be operating 20 hours with an additional 4 hours in startup/shutdown. For the annual worst-case impacts, 4,000 hours of base operation plus 838 hours of startup/shutdown were used. Table 8.1-34 presents these emissions. Note that an emergency generator is included in Table 8.1-34 for worst-case modeling purposes. The applicant is not currently permitting this emission source.

The model receptor grids were derived from 1-second DEM data. Initially, a 180-meter coarse grid was extended to 10 kilometers from the SVEP in all directions. A 30-meter resolution downwash receptor grid was used as described above.

TABLE 8.1-27
ISCST3 Model Input Data: Source Characteristics for Refined Modeling (emissions in grams per second)

Unit	NO_x	SO_2	CO	$PM_{10}/PM_{2.5}$
1-hour average:				
Turbines (each unit)	1.021	0.078	1.487	N/A
Emergency generator	4.036	0.004	0.583	N/A
Cooling tower (each cell)	N/A	N/A	N/A	N/A
3-hour average:				
Turbines (each unit)	N/A	0.078	N/A	N/A
Emergency generator	N/A	0.00126	N/A	N/A
Cooling tower (each cell)	N/A	N/A	N/A	N/A
8-hour average:				
Turbines (each unit)	N/A	N/A	2.432	N/A
Emergency generator	N/A	N/A	0.0729	N/A
Cooling tower (each cell)	N/A	N/A	N/A	N/A
24-hour average:				
Turbines (each unit)	N/A	0.078	N/A	0.756
Emergency generator	N/A	0.000158	N/A	0.00264
Cooling tower (each cell)	N/A	N/A	N/A	0.0112
Annual average:				
Turbines (each unit)	0.604	0.043	N/A	0.417
Emergency generator	0.0024	0.000025	N/A	0.000378
Fire Pump	0.00257	0.000003	N/A	0.00005
Cooling tower (each cell)	N/A	N/A	N/A	0.00617

Thirty-meter refined receptor grids were used in areas where the coarse grid analyses indicated modeled maxima for each site plan would be located. A map showing the layout of the modeling grid around the site plan is presented in Figure 8.1-9. The site plan is shown in Figure 8.1-10.

Receptors for the refined modeling analysis were taken from 1-second USGS DEM data for four 7.5-minute quadrangles, i.e., Romoland, Winchester, Wildomar, Perris, Murrieta, Lake Elsinore, Lake View, Hemet, and Steele Peak. The coarse and refined grids contained a total of approximately 50,000 receptors.

Under SCAQMD Regulation 219, the cooling tower is exempt from District permitting requirements. Notwithstanding the above, the evaluation of compliance contained herein includes the cooling tower for both emissions calculation and modeling purposes per the CEC requirements.

Emissions of PM_{10} and $PM_{2.5}$ were modeled as PM_{10}. The resulting concentrations were then compared to the applicable standards. No SCAQMD significance levels exist for $PM_{2.5}$.

8.1.2.4.2 Fumigation Modeling

Fumigation occurs when a plume that was originally emitted into a stable layer is mixed rapidly to ground-level when unstable air below the plume reaches plume level. Fumigation can cause very high ground-level concentrations for short time periods, typically less than 1 hour. Typically, two situations are addressed according to current modeling practices:

- Type 1: Break-up of the nocturnal radiation inversion by solar warming of the earth surface (inversion breakup), which occurs in the morning after sunrise, and,
- Type 3: Shoreline fumigation caused by advection of pollutants from a stable marine environment to an unstable inland environment. This is required for stacks within 3 kilometers of the shoreline of a large body of water.

Only Type 1 fumigation was modeled with the USEPA model SCREEN3 (version 96043) as the closest distance to the shoreline (Type 3 fumigation) is approximately 56 kilometers to the southwest. Only emissions from the turbine stacks would be affected by fumigation. Fumigation impacts for the turbines were predicted to occur at a distance of 23,449 meters from the turbine stacks (the ISCST3 maximum 1-hour impact occurs about 2,577 meters from the turbine stacks). The SCREEN3 1-hour fumigation impacts, as shown in Table 8.1-28, are only 13 percent of the modeled ISCST3 maxima. Therefore, fumigation will not significantly affect the overall results of the modeling analyses.

TABLE 8.1-28
SCREEN3 1-Hour Fumigation Impacts

Pollutant	Fumigation impacts ($\mu g/m^3$)	Maximum ISCST3 Impact ($\mu g/m^3$)	Fumigation Percent of ISCST3 Maxima
NO_x	23.35	261.39	8.9%
CO	8.21	65.06	12.6%
SO_2	0.31	3.99	7.8%

8.1.2.4.3 Turbine Startup/Shutdown

Facility impacts were also modeled during the startup or shutdown of all five turbines within a one hour timeframe to evaluate short-term impacts under these conditions. Emission rates used for these scenarios were based on an engineering analysis of available vendor data, as supplied by General Electric. A summary of the data evaluated in developing these emission rates was shown in Appendix 8.1A. Turbine exhaust parameters for the minimum operating load results from the screening analysis were used to characterize turbine exhaust during startup/shutdown. Startup/shutdown impacts were evaluated for the 1-hour averaging period for NO_x and CO using ISCST3. Emission rates and stack parameters used in the startup/shutdown modeling analysis are shown in Table 8.1-29. In the modeling analysis, the higher of the startup/shutdown emissions were used to determine the maximum impact. For the 8-hour CO modeling analysis; 2 hours of startup emissions, 2 hours of shutdown emissions, along with 4 hours of base load emissions were included in the refined modeling analysis for CO, and as such, were not modeled separately.

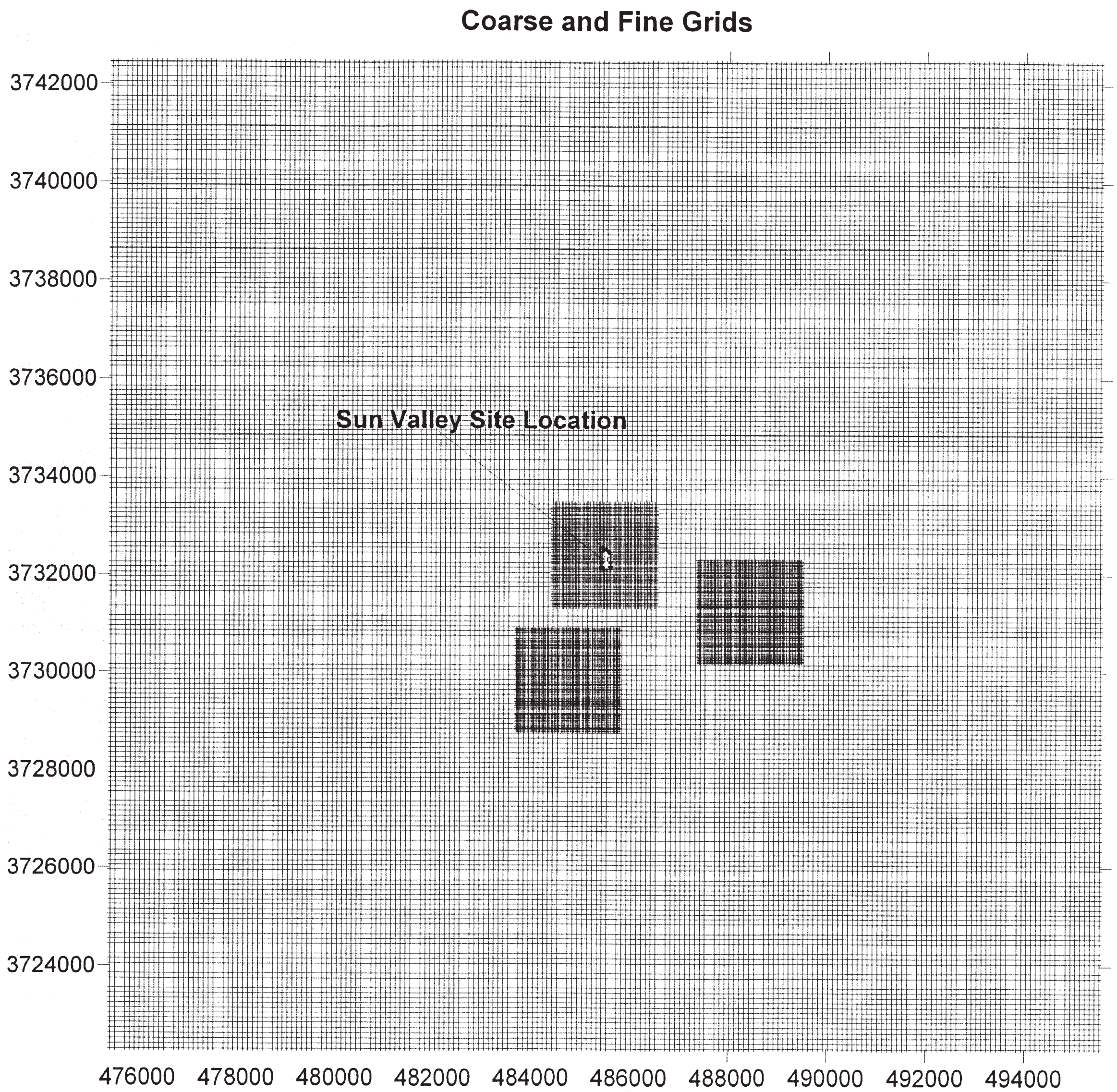

FIGURE 8.1-9
MODELING GRID
SUN VALLEY ENERGY PROJECT
ROMOLAND, CALIFORNIA

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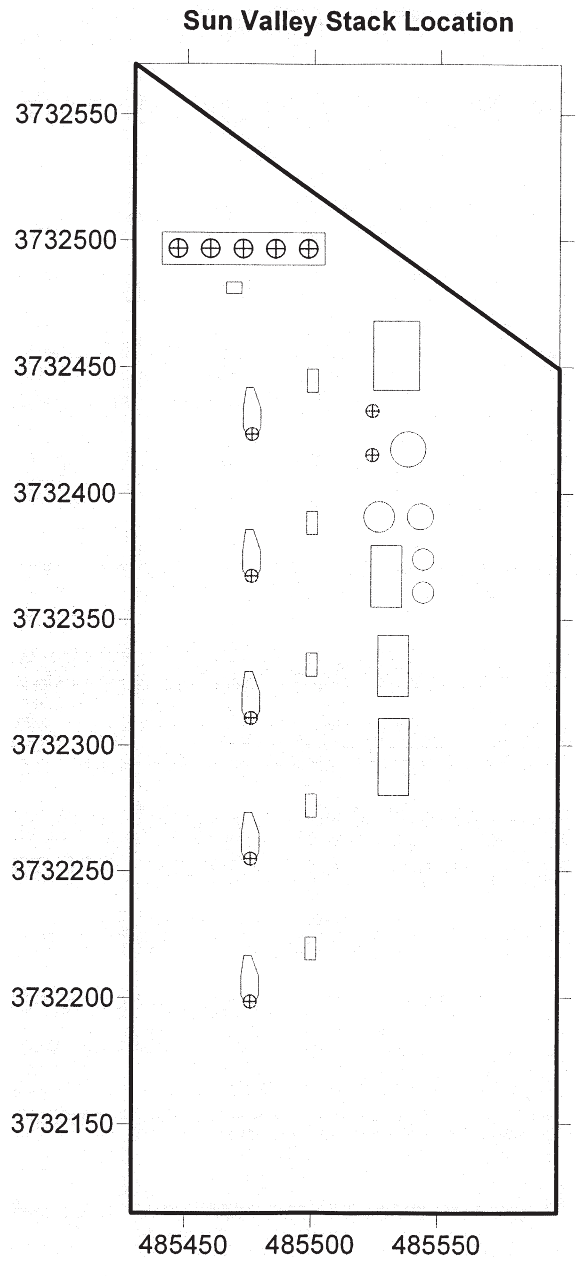

FIGURE 8.1-10
FACILITY-MODELING PLOT PLAN
SUN VALLEY ENERGY PROJECT
ROMOLAND, CALIFORNIA

CH2MHILL

TABLE 8.1-29
Emission Rates and Stack Parameters Used in Modeling Analysis for Startup/Shutdown Emissions Impacts

Parameter	Value
Turbine stack temperature	695.7 deg. K
Turbine exhaust velocity	20.8 m/s
1-hour average emissions*	Startup/Shutdown
NO_x emission rate	1.51/1.355 g/s
CO emission rate	3.326/3.389 g/s

* PM_{10} and SO_2 emissions are less during startup than normal base load operations. The emissions for NO_x and CO are based on the worst-case modeling scenarios. Actual emissions will be less.

8.1.2.4.4 Turbine Commissioning

There are several high emission scenarios that are possible during commissioning. Typically, these commissioning activities occur prior to the installation of the SCR and CO control systems and can occur before the water injection system is completely operational and tuned. Under this scenario, NO_x and CO emissions control systems (SCR and CO catalyst) would not be functioning and the combustor would not be tuned for optimum performance. Notwithstanding the above, the water injection system for NO_x would be operational resulting in a partially controlled situation for NO_x.

NO_2 and CO impacts could be higher during commissioning than under other operating conditions already evaluated. The commissioning period for the project is comprised of several phases in which selected equipment is operated at pre-determined levels. The anticipated phases of commissioning are as follows:

- **Phase 1—**Preliminary break-in and initial checkout
- **Phase 2—**Controlled break in run with the turbine at 5 percent load
- **Phase 3—**Water injection commissioning where water injection control is approximately 50 percent effective
- **Phase 4—**Complete AVR commissioning with turbine at 100 percent load
- **Phase 5—**SCR commissioning with turbine at 75 percent load and SCR is 50 percent effective and the CO catalyst in 100 percent effective
- **Phase 6—**Full load testing and checkout

Commissioning emissions are presented in Appendix 8.1A.

As discussed above and presented in Appendix 8.1A, there are several potential scenarios under which NO_x impacts could be higher than under other operating conditions already evaluated. Under these scenarios, the maximum NO_x emissions can be conservatively estimated to be equivalent to the 175 lb/hr. CO emissions during commissioning periods would be equivalent to 255 lbs/hr.

The ISCST3 modeling analysis for the commissioning period assumed for NO_x that either one turbine would be at operating at 175 lb/hr or three turbines would be operating at 99 lb/hr. In either case, the other turbines would be operating at base load (i.e., 8.1 lb/hr NO_x). The maximum 1-hour NO_x impact during commissioning was calculated to be 170.49 µg/m^3. With the maximum background one-hour NO_2 concentration of 191.3 µg/m^3, the maximum total impact would be 428.72 µg/m^3, which is below the state one-hour NO_2 standard of 470 µg/m^3. Modeling of turbine commissioning for CO emissions was also performed, with 1-hour impacts calculated at 962.44 µg/m^3 and 8-hour impacts at 698.49 µg/m^3, which when added to background concentrations are well below the State and federal standards for CO.

8.1.2.4.5 Pre-construction Monitoring

To ensure that the impacts from the SVEP will not cause or contribute to a violation of an ambient air quality standard or an exceedance of a PSD increment, an analysis of the existing air quality in the area of the SVEP is necessary. SCAQMD rules require pre-construction ambient air quality monitoring data for the purposes of establishing background pollutant concentrations in the impact area. A facility may use existing air quality monitoring data to establish background data and thus be exempted from the pre-construction monitoring requirements. Additionally, a facility may be exempted from this requirement if the predicted air quality impacts of the facility do not exceed the *de minimis* levels listed in Table 8.1-30.

TABLE 8.1-30
SCAQMD PSD Pre-Construction Monitoring Exemption Levels

Pollutant	Averaging Period	*De minimis* Level
CO	8-hour average	575 µg/m^3
PM_{10}	24-hour average	10 µg/m^3
NO_2	annual average	14 µg/m^3
SO_2	24-hour average	13 µg/m^3

A facility may, with the District's approval, rely on air quality monitoring data collected at District monitoring stations to satisfy the requirement for pre-construction monitoring. In such a case, in accordance with Section 2.4 of the USEPA PSD guideline, the last 3 years of ambient monitoring data may be used if they are representative of the area's air quality where the maximum impacts occur due to the proposed source.

8.1.2.5 Total Facility Impacts

8.1.2.5.1 Results of the Ambient Air Quality Modeling Analyses

The maximum facility impacts calculated from each of the modeling analyses described above are summarized in Table 8.1-31. The results of the fumigation modeling analysis are summarized in Appendix 8.1B.

TABLE 8.1-31
Summary of Results from Refined Modeling Analyses

Pollutant	Averaging Time	Modeled Concentration (μg/m^3)[a]		
		ISCST3	Fumigation[b]	Startup
NO_x	1-hour	261.39	23.35	75.8
	annual	0.90	N/A	N/A
SO_2	1-hour	3.99	0.31	N/A
	3-hour	3.92	[b]	N/A
	24-hour	1.26	[b]	N/A
	annual	0.08	N/A	N/A
CO	1-hour	65.06	8.21	169.89
	8-hour	64.61	[b]	N/A
PM_{10}/$PM_{2.5}$[c]	24-hour	11.01	[b]	N/A
	annual	0.84	N/A	N/A

[a] Including cooling tower where applicable.
[b] Shoreline fumigation not evaluated (EPA-454/R-92-019, Section 4.5.3).
[c] The maximum 24-hour PM_{10} impact on a per unit basis did not exceed 2.5 μg/m^3 on a 24-hour basis.

Pre-construction monitoring is not required because the maximum impacts did not exceed *de minimis* levels, as shown in Table 8.1-32.

TABLE 8.1-32
Evaluation of Pre-construction Monitoring Requirements

Pollutant	Averaging Time	Exemption Concentration (μg/m^3)	Maximum Modeled Concentration (μg/m^3)	Monitoring Required?
NO_x	annual	14	0.90	no
SO_2	24-hr	13	1.26	no
CO	8-hr	575	64.61	no
PM_{10}[a]	24-hr	10	11.01	no[b]

[a] Including cooling tower.
[b] No monitoring is proposed as background PM_{10} is already monitored in the area.

To determine a project's air quality impacts, the modeled concentrations are added to the maximum background ambient air concentrations and then compared to the applicable ambient air quality standards. The modeled concentrations have already been presented in earlier tables. The maximum background ambient concentrations are listed in the following text and tables.

The SCAQMD monitors ambient air quality concentrations at several sites within the regional vicinity of the proposed plant site.

Table 8.1-33 presents the maximum established background concentrations used in the impacts analysis as derived from data collected at the nearest monitoring sites. Data on the specific monitoring sites are delineated in Section 8.1.1.

TABLE 8.1-33
Maximum Background Concentrations (2002-2004)*

Pollutant	Averaging Time	Average of High Values for Last 3 Years	Highest Value at All Stations for Last 3 Years
NO_2 ppm	1-hour annual	0.0875 0.0187	0.10 0.024
CO ppm	1-hour 8-hour	4.13 2.32	7.0 3.9
PM_{10} µg/m^3	24-hour annual AM	110 42.8	164 58.5
$PM_{2.5}$ µg/m^3	24-hour annual AM	86.03 24.15	104.3 27.5
Ozone ppm	max 1-hour max 8 -hour	0.142 0.118	0.155 0.137
SO_2 ppm	1-hour 24-hour annual	0.018 0.01 0.0025	0.02 0.015 0.003

* Data reported by stations and years as listed in Section 8.1.1.

Maximum ground-level impacts due to operation of the SVEP are shown together with the ambient air quality standards in Table 8.1-34. Using the conservative assumptions described earlier, the results indicate that the SVEP will not cause or contribute to violations of any state or federal air quality standards, with the exception of the state PM_{10} and $PM_{2.5}$ standard. For these pollutants, existing background concentrations already exceed the state standards. Adding the maximum 24-hour and annual $PM_{2.5}$ background values from Table 8.1-33 above to the maximum modeled PM_{10} concentrations (11.01 µg/m^3, Table 8.1-34 below) produces a total 24-hour $PM_{2.5}$ impact of 115.31 µg/m^3 and an annual impact of 28.34 µg/m^3.

TABLE 8.1-34
Modeled Maximum Project Impacts

Pollutant	Averaging Time	Maximum Facility Impact (µg/m^3)	Background (µg/m^3)	Total Impact (µg/m^3)	State Standard (µg/m^3)	Federal Standard (µg/m^3)
NO_2	1-hour annual	261.39 0.90	191.3 45.9	452.7 46.84	470 -	- 100
SO_2	1-hour 3-hour 24-hour annual	3.99 3.92 1.26 0.08	53.2 53.2 39.9 8	57.2 57.1 41.2 8.1	650 - 109 -	- 1,300 365 80
CO	1-hour 8-hour	65.06 64.61	8,153.1 4,542.4	8218.1 4607	23,000 10,000	40,000 10,000
PM_{10}[a]	24-hour annual[b]	11.01 0.84	164 58.5	175 59.3	50 30	150 -

Notes:

[a] Including cooling tower

[b] Annual Arithmetic Mean

Worst-case 1-hour NO_x impacts are dominated by the emergency equipment.

8.1.2.6 PSD Increment Consumption

The PSD program was established to allow emission increases (increments of consumption) that do not result in significant deterioration of ambient air quality in areas where criteria pollutants have not exceeded the NAAQS. For the purposes of determining applicability of the PSD program requirements, the following regulatory procedure is used:

- SVEP emissions are evaluated to determine whether the potential increase in emissions will be significant. The emissions increases are those that will result from the proposed new equipment. For new facilities that include mid to large simple cycle gas turbines, USEPA considers a potential increase of 250 tons per year of any of the criteria pollutants to be significant. In this specific case, the SVEP is not considered a new major source. Since this facility is not a new major facility, an increment analysis is not required. Potential emissions increases are compared with the levels considered significant for new sources in Table 8.1-35. It should be noted that in order for the following significant emissions rates to apply to SVEP, at least one PSD pollutant must exceed the 250 threshold limit. Since this is not the case, the significant emission levels in Table 8.1-35 do not apply to SVEP.

TABLE 8.1-35
Comparison of Emissions Increase with PSD Significance Emissions Levels

Pollutant	Emissions (tons per year)	Significant Emission Levels (tons per year)[b]	Significant?
NO_x	74.8	40	no
SO_2	5.4	40	no
VOC	20.9	40	no
CO	123.8	100	no
PM_{10}[a]	52.9	15	no

[a] Includes turbines, IC engine, and cooling tower, base case at 3,468 hours.

[b] Values apply only if the SVEP is determined to be a major source.

- If an ambient impact analysis is required, the analysis is first used to determine if the impact levels are significant. The determination of significance is based on whether the impacts exceed established significance levels (SCAQMD Rules 1303 Table A-2, and 1704(b)) shown in Table 8.1-36. If the significance levels are not exceeded, no further analysis is required.
- If the significance levels are exceeded, an analysis is required to demonstrate that the allowable increments will not be exceeded, on a pollutant-specific basis. Increments are the maximum increases in concentration that are allowed to occur above the baseline concentration. These PSD increments are also shown in Table 8.1-36.

Table 8.1-36 shows that the SVEP will not be a PSD major new source of any pollutant. Emissions of all pollutants from the SVEP will be below the 250-ton-per-year major new source threshold. Since the SVEP is not considered major for at least one criteria pollutant, PSD review and an increment analysis is not required for the entire facility.

TABLE 8.1-36
SCAQMD PSD Class II Area Levels of Significance

Pollutant	Averaging Time	Significant Impact Levels	Maximum Allowable Increments
NO_2	annual	1 µg/m^3	25 µg/m^3
SO_2	3-hour	25 µg/m^3	512 µg/m^3
	24-hour	5 µg/m^3	91 µg/m^3
	annual	1 µg/m^3	20 µg/m^3
CO	1-hour	2000 µg/m^3	N/A
	8-hour	500 µg/m^3	N/A
PM_{10}	24-hour	5 µg/m^3	30 µg/m^3
	annual	1 µg/m^3	17 µg/m^3

Notwithstanding the above, the maximum modeled impacts from the SVEP are compared with the significance levels in Table 8.1-37 for informational purposes. These comparisons show that the SVEP does not exceed any of the SCAQMD/PSD significance levels. As such, no multi-source modeling analyses were performed.

TABLE 8.1-37
Comparison of Maximum Modeled Impacts and PSD Significance Thresholds

Pollutant	Averaging Time	Maximum Modeled Impacts (µg/m^3)	Significance Threshold (µg/m^3)	Significant?
NO_2	annual	0.90	1	no
SO_2	3-hour	3.92	25	no
	24-hour	1.26	5	no
	annual	0.08	1	no
CO	1-hour	65.06	2,000	no
	8-hour	64.61	500	no
PM_{10}[a]	24-hour	11.01	5	no[b]
	annual	0.84	1	no

[a] Including cooling tower.
[b] The area is non-attainment for PM_{10}, so the significance level does not apply.

8.1.2.7 Screening Health Risk Assessment

The screening health risk assessment (SHRA) was conducted to determine expected impacts on public health of the noncriteria pollutant emissions from the facility. The SHRA was conducted in accordance with the California Office of Environmental Health Hazard Assessment (OEHHA)/CARB Risk Assessment Guidelines (August 2003) and SCAQMD Rule 1401. The SHRA estimated the offsite cancer risk at the maximum impact receptor (MIR) location. If impacts at the MIR are below the significance thresholds with respect to cancer risk and acute and chronic health effects, then the impacts at all other identified receptors will also be insignificant. The OEHHA/CARB Health Risk Assessment computer program (HARP) was used to evaluate multipathway exposure to toxic substances. Because of the conservatism (overprediction) built into the established risk analysis methodology, the actual risks will be lower than those calculated.

A health risk assessment requires the following information:

- Unit risk factors (or carcinogenic potency values) for any carcinogenic substances that may be emitted
- Noncancer Reference Exposure levels (RELs) for determining non-carcinogenic health impacts
- Annual average and maximum 1-hour emission rates for each substance of concern
- The modeled maximum offsite concentration of each of the pollutants emitted

Pollutant-specific unit risk factors are the estimated probability of a person contracting cancer as a result of constant exposure to an ambient concentration of 1 $\mu g/m^3$ over a 70-year lifetime. The SHRA uses unit risk factors specified by the OEHHA. The cancer risk for each pollutant emitted is the product of the unit risk factor and the modeled concentration. All of the pollutant cancer risks are assumed to be additive.

An evaluation of the potential noncancer health effects from long-term (chronic) and short-term (acute) exposures has also been included in the SHRA. Many of the carcinogenic compounds are also associated with noncancer health effects and are therefore included in the determination of both cancer and noncancer effects. RELs are used as indicators of potential adverse health effects. RELs are generally based on the most sensitive adverse health effect reported and are designed to protect the most sensitive individuals. However, exceeding the REL does not automatically indicate a health impact. The OEHHA reference exposure levels were used to determine any adverse health effects from noncarcinogenic compounds. A hazard index for each noncancer pollutant is then determined by the ratio of the pollutant annual average concentration to its respective REL for a chronic evaluation. Each of the individual indices is summed to determine the overall hazard index for the project. Because noncancer compounds do not target the same system or organ, this sum is considered conservative. The same procedure is used for the acute evaluation.

The SVEP SHRA results are compared with the established risk management procedures for the determination of acceptability. The established risk management criteria include those listed below:

- If the potential increased cancer risk is less than 1 in 1 million, the facility risk is considered not significant.
- If the potential increased cancer risk is greater than 1 in 1 million but less than 10 in 1 million and Toxics-Best Available Control Technology (T-BACT) has been applied to reduce risks, the facility risk is considered acceptable.
- If the potential increased cancer risk is greater than 10 in 1 million and there are mitigating circumstances that, in the judgment of a regulatory agency, outweigh the risk, the risk is considered acceptable.
- For noncancer effects, total hazard indices of 1 or less are considered not significant.
- For a hazard index greater than 1, OEHHA and the reviewing agency conduct a more refined review of the analysis and determine whether the impact is acceptable.

The SHRA includes the noncriteria pollutants listed above in Table 8.1-26. The receptor grid described earlier for criteria pollutant modeling was used for the SHRA. The three highest MIR receptors as derived from the criteria pollutant modeling were used in the SHRA. Impacts at all other receptor locations, i.e., sensitive or non-sensitive receptors, would be less than the three highest MIR receptors. See Appendix 8.1D for discussion of receptor locations, etc.

The SHRA results for the SVEP are presented in Table 8.1-38, and the detailed calculations are provided in Appendix 8.1D.

TABLE 8.1-38
Screening Health Risk Assessment Results*

Risk Type	Value
Cancer risk at maximum impact receptor	1.37 per million
Total cancer burden	0.0081
Acute inhalation hazard index	0.079
Chronic inhalation hazard index	0.0152
Chronic noninhalation exposure	no value calculated

* Turbines and cooling tower based on the maximum modeled case of 4,000 hours of operation.

The screening HRA results indicate that the acute and chronic hazard indices are well below 1.0, and are therefore not significant. The maximum chronic noninhalation exposure was not established due to the lack of REL data for the specified substances and is therefore considered insignificant. The cancer risk to a maximally exposed individual at the maximum impact receptor location is 1.37 in 1 million, well below the T-BACT 10 in 1 million level. The screening HRA results indicate that, overall, the SVEP will not pose a significant health risk.

8.1.2.8 Visibility Screening Analysis

The project, as a new source, has the potential to emit over 15 tons per year of PM_{10} and over 40 tons per year of NO_x. SCAQMD rules require that a coherent plume visibility analysis must be completed for the following Class I areas if they are within certain distances from the proposed project: Agua Tibia, Cucamonga, Joshua Tree, San Gabriel, San Gorgonio, and San Jacinto. Based on the distances listed in Table C-1 of SCAQMD Rule 1303, none of the Class I areas are within the distances prescribed, thus, no VISCREEN analysis was completed.

8.1.2.9 Construction Emissions and Impacts Analysis

Emissions due to the construction phase of the project have been estimated, including an assessment of emissions from vehicle and equipment exhaust and the fugitive dust generated from material handling. A dispersion modeling analysis was conducted based on these emissions. A detailed analysis of the emissions and ambient impacts is included in Appendix 8.1E. With the exception of the 24-hour PM_{10} concentrations, the results of the analysis indicate that the maximum construction impacts will be below the state and federal standards for all the criteria pollutants emitted. The best available emission control techniques will be used. The SVEP construction site impacts are not unusual in comparison to most construction sites, i.e., construction sites that use good dust suppression techniques and low-emitting vehicles typically do not cause violations of air quality standards.

8.1.3 Cumulative Air Quality Impacts Analysis

An analysis of potential cumulative air quality impacts that may result from the SVEP and other reasonably foreseeable projects is generally required only when project impacts are significant.

To ensure that potential cumulative impacts of the SVEP and other nearby projects are adequately considered, a cumulative impacts analysis was conducted in accordance with the protocol included as Appendix 8.1H. This procedure is similar to that used to evaluate increment consumption, although no increment consumption analysis is required for the SVEP.

8.1.4 Mitigation

In addition to implementing best available control technology (BACT) requirements, District Rule 1303(b)(2)(A) requires the SVEP to provide full emission offsets (ERCs) when emissions exceed specified levels on a pollutant-specific basis as delineated in Rule 1304(d)(1) Table A. In addition, for NO_x and SO_x, the RECLAIM rules in Regulation XX require that these pollutants be mitigated through the use of RTCs in amounts equal to the actual annual emissions of each pollutant subject to the RECLAIM program. Table 8.1-39 shows the net emissions increases for the proposed facility and the offsets required per Regulation XIII and XX.

While the SCAQMD regulations require facility emissions offsets to be provided on an annual emissions basis, the CEC may mandate additional mitigation in addition to that required by the SCAQMD. Maximum hourly, daily, and annual emissions are based on expected operation of the SVEP, including the cooling tower, as presented in Appendix 8.1A.

Mitigation for annual emissions will be provided through the acquisition of offsets as delineated in Tables 8.1-39 and 8.1-40. Sufficient offsets to fulfill this requirement will be provided by the applicant prior to issuance of the SCAQMD Permit to Operate. The applicant will provide offsets according to the ratios specified in the SCAQMD NSR regulation (Regulation XIII).

In addition to implementing best available control technology (BACT) requirements, District Rule 1303(b)(2)(A) requires the SVEP to provide full emission offsets (ERCs) when emissions exceed specified levels on a pollutant-specific basis as delineated in Rule 1304(d)(1) Table A. In addition, for NO_x and SO_x, the RECLAIM rules in Regulation XX require that these pollutants be mitigated through the use of RTCs in amounts equal to the actual annual emissions of each pollutant subject to the RECLAIM program. Table 8.1-39 shows the net emissions increases for the proposed facility and the offsets required per Regulation XIII and XX.

Table 8.1-40 shows the offset requirements based solely on the SVEP emissions increases. It should be noted that Rule 1303 only requires offsets for non-attainment pollutants. CO offsets are included in this table for the following reason: the attainment re-designation request by the District from nonattainment to attainment has not yet been approved by EPA, so for purposes of this application and analysis, the District is still assumed to be nonattainment for CO.

TABLE 8.1-39
Net Emissions Increases and Required Offsets

Pollutant	Offset Threshold	Offset Ratio	SVEP Emission Rates	Net Emissions Increase	Offsets Required
VOC	4 tpy	1.2:1	20.9 tpy	20.9 tpy	Yes
NO_x	4 tpy	1:1	74.8 tpy	74.8 tpy	Yes
PM_{10}	4 tpy	1.2:1	52.9 tpy	52.9 tpy	Yes
CO	29 tpy	1.2:1	123.8 tpy	123.8 tpy	Yes
SO_2	4 tpy	1.2:1 or 1:1	5.38 tpy	5.38 tpy	Yes

TABLE 8.1-40
Offset Requirements for the SVEP

Pollutant	New Facility Offset Threshold	SVEP Emission Rates	Offsets Required	Offset Ratio	Amount of Offsets Required
VOC	4 tpy	20.9 tpy	yes	1.2:1	25.1 tpy
NO_x	4 tpy	74.8 tpy	yes	1:1	74.8 tpy
PM_{10}	4 tpy	52.9 tpy	yes	1.2:1	63.5 tpy
CO	29 tpy	123.8 tpy	yes	1.2:1	148.6 tpy
SO_2	4 tpy	5.38 tpy	yes	1:1	5.38 tpy

Offsets obtained pursuant to Regulation XIII (Rule 1303(b)(2)(A) must be acquired at a ratio of 1.2 to 1. Notwithstanding the foregoing, offsets acquired from the Priority Reserve per Rule 1309.1 are subject to a ratio of 1:1. Offsets for NO_x and SO_x pursuant to the RECLAIM program are obtained at a ratio of 1:1.

Regulation XIII imposes emissions offset requirements, or requires project denial, if SO_2, NO_2, PM_{10}, or CO air quality modeling results indicate emissions will interfere with the attainment or maintenance of the applicable ambient air quality standards or will exceed PSD increments. For many of the pollutants and averaging periods, District regulations do not require the SVEP to conduct these analyses, since the modeled impacts of the proposed facility are not significant under District rules. However, modeling for these pollutants has been conducted to satisfy CEC requirements. The modeling analyses show that facility emissions will not interfere with the attainment or maintenance of the applicable air quality standards.

Emissions offset requirements for SVEP are shown in Table 8.1-41. The project Applicant will provide all necessary documentation to show control or ownership of the required emissions offsets prior to issuance of the facility Permit to Operate by the SCAQMD. Offsets may be acquired from the District bank, Priority Reserve, or from other sources such as shutdowns, or non-traditional sources of emissions reductions credits.

Emissions of PM_{10} and $PM_{2.5}$ are expected to be fully mitigated through the purchase of ERCs.

Emissions offset requirements for CO per Rule 1303 are currently required at a 1.2:1 ratio for sources with emissions above the stated offset thresholds delineated in Tables 8.1-39 and 8.1-40. Should the re-designation request for CO attainment be approved by EPA, there is the potential for the CO offset requirement to be deleted.

TABLE 8.1-41
Facility Offset Requirements

Pollutant	Emissions (tons/yr)	Required Offset Ratio	Required Offsets (tons/yr)
NO_x	74.8	1:1	74.8 (RTC)
VOC	20.9	1.2:1	25.1 (ERC)
PM_{10}	52.9	1.2:1	63.5 (ERC)
CO	123.8	1.2:1	148.6 (ERC)
SO_2	5.38	1:1	5.38 (RTC)

A current listing of deposits in the SCAQMD offset bank is included in Appendix 8.1G. Should the project applicant decide to acquire offsets from the District bank, negotiations on amounts and market prices will be undertaken with various certificate owners. Because of the highly competitive nature of the offset market, confidential treatment of negotiations with the various owners is requested. Such information will be supplied to the CEC and SCAQMD under separate cover.

8.1.5 Laws, Ordinances, Regulations and Standards

This section provides a detailed discussion of LORS applicable to air quality for the SVEP. It begins with a description of the national ambient air quality standards (NAAQS). It then describes, in succession, the federal, state, and local LORS, respectively. Finally, this section includes an analysis of the SVEP's compliance with federal, state, and local LORS.

8.1.5.1 Applicable LORS

8.1.5.1.1 Federal LORS

The USEPA implements and enforces the requirements of many of the federal environmental laws. EPA Region IX, in San Francisco, administers federal EPA programs in California.

The Federal Clean Air Act, as most recently amended in 1990, provides EPA with the legal authority to regulate air pollution from stationary sources such as the SVEP. EPA has promulgated the following stationary source regulatory programs to implement the requirements of the Clean Air Act:

- Standards of Performance for New Stationary Sources (NSPS)
- National Emission Standards for Hazardous Air Pollutants (NESHAP)
- Prevention of Significant Deterioration (PSD)

- New Source Review (NSR)
- Title IV: Acid Deposition Control
- Title V: Operating Permits
- Compliance Assurance Monitoring (CAM) Rule
- Toxic Release Inventory (TRI)Program

National Standards of Performance for New Stationary Sources

Authority: Clean Air Act §111, 42 USC §7411; 40 CFR Part 60, Subpart GG

Purpose: Establishes standards of performance to limit the emission of criteria pollutants (air pollutants for which EPA has established NAAQS from new or modified facilities in specific source categories. The applicability of these regulations depends on the equipment size; process rate; and/or the date of construction, modification, or reconstruction of the affected facility. The new revised Standards of Performance for Stationary Gas Turbines (Subpart KKKK)—which limit NO_x and SO_2 emissions from subject equipment—are applicable to the gas turbines. The proposed BACT emissions limits for NO_x and SO_2 are well below the Subpart KKKK requirements. These standards are implemented at the local level with federal oversight.

Administering Agency: SCAQMD, with EPA Region IX oversight.

National Emission Standards for Hazardous Air Pollutants

Authority: Clean Air Act §112, 42 USC §7412; 40 CFR Part 63

Purpose: Establishes national emission standards to limit hazardous air pollutant (or HAP, which are air pollutants identified by EPA as causing or contributing to the adverse health effects of air pollution but for which NAAQS have not been established) emissions from existing major sources of HAP emissions in specific source categories. The NESHAPs program also requires the application of maximum achievable control technology (MACT) to any new or reconstructed major source of HAP emissions to minimize those emissions. EPA has developed MACT regulations for the following source categories likely to be constructed and operated at SVEP:

- **Subpart Q: Cooling Towers.** Only applies to cooling towers using chromium-based water treatment chemicals. The cooling towers at SVEP will not use chromium-based chemicals.
- **Subpart YYYY: Combustion Turbines.** The final rule requires reductions in emissions of a number of HAPs from turbines constructed after 1-14-03. The rule provisions have been stayed as of 8-14-04 for lean-premix and diffusion flame turbines pending EPA's proposal to delist these types of units from the rule.

Administering Agency: SCAQMD, with EPA Region IX oversight.

Prevention of Significant Deterioration Program

Authority: Clean Air Act §160-169A, 42 USC §7470-7491; 40 CFR Parts 51 and 52

Purpose: Requires pre-construction review and permitting of new or modified major stationary sources of air pollution to prevent significant deterioration of ambient air quality. PSD applies only to pollutants for which ambient concentrations do not exceed the corresponding NAAQS (i.e., attainment pollutants). The PSD program allows new sources of air pollution to be constructed, or existing sources to be modified, while preserving the existing ambient air quality levels, protecting public health and welfare, and protecting

Class I areas (e.g., national parks and wilderness areas). These requirements are typically implemented at the local level with federal oversight, but this is not the case with the SCAQMD which does not have PSD program authority at this time. Therefore, EPA Region 9 will be responsible for the PSD permitting process for the proposed facility, if applicable.

Administering Agency: EPA Region IX.

New Source Review

Authority: Clean Air Act §171-193, 42 USC §7501 et seq.; 40 CFR Parts 51 and 52

Purpose: Requires pre-construction review and permitting of new or modified major stationary sources of air pollution to allow industrial growth without interfering with the attainment of ambient air quality standards. NSR applies to pollutants for which ambient concentrations exceed the corresponding NAAQS (i.e., nonattainment pollutants). These requirements are implemented at the local level with federal oversight.

Administering Agency: SCAQMD, with EPA Region IX oversight.

Title IV—Acid Rain Program

Authority: Clean Air Act §401, 42 USC §7651 et seq.; 40 CFR Part 72

Purpose: Requires the monitoring and reduction of emissions of acidic compounds and their precursors. The principal source of these compounds is the combustion of fossil fuels. Therefore, Title IV established national standards to limit SO_x and NO_x emissions from electrical power generating facilities. These standards are implemented at the local level with federal oversight.

Administering Agency: SCAQMD, with EPA Region IX oversight.

Title V—Operating Permits Program

Authority: Clean Air Act § 501 (Title V), 42 USC §7661; 40 CFR Part 70

Purpose: Requires the issuance of operating permits that identify all applicable federal performance, operating, monitoring, recordkeeping, and reporting requirements. Title V applies to major facilities, acid rain facilities, subject solid waste incinerator facilities, and any facility listed by EPA as requiring a Title V permit. These requirements are implemented at the local level with federal oversight.

Administering Agency: SCAQMD, with EPA Region IX oversight.

CAM Rule

Authority: Clean Air Act § 501 (Title V), 42 USC §7414; 40 CFR Part 64

Purpose: Requires facilities to monitor the operation and maintenance of emissions control systems and report any control system malfunctions to the appropriate regulatory agency. If an emissions control system is not working properly, the CAM rule also requires a facility to take action to correct the control system malfunction. The CAM rule applies to emissions units with uncontrolled potential to emit levels greater than applicable major source thresholds. However, emission control systems governed by Title V operating permits requiring continuous compliance determination methods are exempt from the CAM rule. Since the project will be issued a Title V permit requiring the installation and operation of continuous emissions monitoring systems, the project will qualify for this exemption from the requirements of the CAM rule. Consequently, the CAM rule will not be further addressed.

Administering Agency: SCAQMD, with EPA Region IX oversight.

TRI Program

Authority: Emergency Planning and Community Right-to-Know Act § 313

Purpose: Under the Emergency Planning and Community Right-to-Know Act (EPCRA), certain facilities and establishments must report toxic releases to the environment if they:

- Manufacture more than 25,000 pounds of a listed chemical per year;
- Process more than 25,000 pounds of a listed chemical per year; or
- Otherwise use more than 10,000 pounds of a listed chemical per year.

This program is commonly referred to as the Toxic Release Inventory Program. As applied to electric utilities, only those facilities in Standard Industrial Classification (SIC) Codes 4911, 4931, and 4939 that combust coal and/or oil for the purpose of generating electricity for distribution in commerce must report under this regulation. The SVEP falls under SIC Code 4911, which covers establishments engaged in the generation, transmission, and/or distribution of electric energy for sale. However, the SVEP will not combust coal and/or oil for the purpose of generating electricity for distribution in commerce. Accordingly, this program does not apply to the SVEP. Therefore, the TRI program will not be further addressed.

Administering Agency: EPA Region IX.

8.1.5.1.2 State LORS

State Implementation Plan

Authority: Health & Safety Code (H&SC) §39500 et seq.

Purpose: Required by the Federal Clean Air Act, the SIP must demonstrate the means by which all areas of the state will attain NAAQS within the federally mandated deadlines. CARB reviews and coordinates preparation of the SIP. Local APCDs must adopt new rules (and/or revise existing rules) and demonstrate that the resulting emission reductions, in conjunction with reductions in mobile source emissions, will result in the attainment of NAAQS. The relevant SCAQMD Rules and Regulations that also have been incorporated into the SIP are discussed under local LORS, below.

Administering Agency: SCAQMD, with CARB and EPA Region IX oversight.

California Clean Air Act

Authority: H&SC §40910 – 40930

Purpose: Established in 1989, the California Clean Air Act requires local APCDs to attain and maintain both national and state AAQS at the "earliest practicable date." Local APCDs must prepare air quality plans demonstrating the means by which AAQS will be attained. The SCAQMD Air Quality Plan is discussed with the local LORS.

Administering Agency: SCAQMD, with CARB oversight.

Toxic Air Contaminant Program

Authority: H&SC §39650 – 39675

Purpose: Established in 1983, the Toxic Air Contaminant Identification and Control Act creates a two-step process to identify toxic air contaminants (TACs) and control their emissions. CARB identifies and prioritizes the pollutants to be considered for identification as TACs. CARB assesses the potential for human exposure to a substance while the Office of Environmental Health Hazard Assessment evaluates the corresponding health effects. Both agencies collaborate in the preparation of a risk assessment report that concludes whether a substance poses a significant health risk and should be identified as a TAC. In 1993, the Legislature amended the program to identify the 189 federal hazardous air pollutants as TACs. CARB reviews the emission sources of an identified TAC and develops, if necessary, air toxics control measures to reduce the emissions. This program is implemented at the local level with state oversight.

Administering Agency: SCAQMD, with CARB oversight.

Air Toxic "Hot Spots" Act

Authority: CA Health & Safety Code §44300-44384; 17 CCR §93300-93347

Purpose: Established in 1987, the Air Toxics "Hot Spots" Information and Assessment Act supplements the TAC program, by requiring the development of a statewide inventory of TAC emissions from stationary sources. The program requires affected facilities to prepare (1) an emissions inventory plan that identifies relevant TACs and sources of TAC emissions; (2) an emissions inventory report quantifying TAC emissions; and (3) a health risk assessment, if necessary, to characterize the health risks to the exposed public. Facilities whose TAC emissions are deemed to pose a significant health risk must issue notices to the exposed population. In 1992, the Legislature amended the program to further require facilities whose TAC emissions are deemed to pose a significant health risk to implement risk management plans to reduce the associated health risks. This program is implemented at the local level with state oversight.

Administering Agency: SCAQMD, with CARB oversight.

CEC and CARB Memorandum of Understanding

Authority: CA Pub. Res. Code § 25523(a) and (d)(2); 20 CCR §1752, 1752.5, 2300-2309, and Div. 2, Chap. 5, Art. 1, Appendix B, Part (k)

Purpose: Establishes requirements in the CEC's decision-making process on an application for certification that assures protection of environmental quality. Establishes coordination on air quality issues between the CEC and local air districts.

Administering Agency: California Energy Commission.

Public Nuisance

Authority: CA Health & Safety Code § 41700

Purpose: Prohibits the discharge from a facility of air pollutants that cause injury, detriment, nuisance, or annoyance to the public, or which endanger the comfort, repose, health, or safety of the public, or that damage business or property.

Administering Agency: SCAQMD, with CARB oversight.

8.1.5.1.3 Local LORS

South Coast Air Quality Management District Air Quality Plan
Authority: H&SC §40914

Purpose: The SCAQMD plan defines the proposed strategies, including stationary source control measures and new source review rules, whose implementation will attain the state and federal AAQS. The air quality plans also demonstrate the required annual reduction in emissions of nonattainment pollutants in the SCAQMD. The relevant stationary source control measures and new source review requirements are discussed with SCAQMD Rules and Regulations.

Administering Agency: SCAQMD, with CARB oversight.

SCAQMD Rule 201—Permit to Construct
Authority: H&SC §40000 et seq., H&SC §40400 et seq.

Purpose and Requirements: Rule 201 (Permit to Construct) establishes an orderly procedure for the review of new and modified sources of air pollution through the issuance of permits. Rule 201 specifies that any facility installing nonexempt equipment that causes or controls the emission of air pollutants must first obtain a Permit to Construct from the SCAQMD.

Administering Agency: SCAQMD, with EPA Region IX and CARB oversight.

SCAQMD Pre-construction Review for Criteria Pollutants
Authority: H&SC §40000 et seq., H&SC §40400 et seq.

SCAQMD has three separate pre-construction review programs for new or modified sources of criteria pollutant emissions:

- **Regulation XIII (New Source Review)** combines the federal and state NSR requirements into a single rule. Regulation XIII establishes pre-construction requirements for new or modified facilities to ensure that operation of such facilities does not interfere with progress towards the attainment of AAQS without unnecessarily restricting economic growth. For RECLAIM facilities, this rule only applies to those nonattainment pollutants, or their precursors, not regulated under the RECLAIM program. Since the SVEP will be a new RECLAIM facility for NO_x, nonattainment pollutant provisions for NO_x are addressed under Rule 2005, and not under Regulation XIII.
- **Regulation XVII (Prevention of Significant Deterioration)** implements the PSD requirements of the Federal Clean Air Act for attainment pollutants (i.e., NO_2 and SO_2). Regulation XVII establishes pre-construction review requirements for new or modified facilities to ensure that operation of such facilities does not significantly deteriorate air quality in attainment areas while maintaining a margin for future growth. The PSD requirements apply on a pollutant-specific basis to any project that is a new major stationary source or a major modification to an existing major stationary source. Per Regulation XVII SCAQMD classifies fossil fuel-fired steam electric plants with heat input ratings exceeding 250 MMBtu/hr that emit any contaminant in excess of the regulation thresholds as major stationary sources. NO_x or SO_x emissions from a modified major source are subject to PSD if the net emission increases for each pollutant

exceeds 25 and 40 tpy, respectfully. Presently, the SCAQMD does not have delegated authority for the PSD program; therefore EPA Region IX will handle all PSD permitting activities for SVEP, if applicable.

- **Rule 2005 (New Source Review for RECLAIM)** integrates the new source review requirements of the federal and California Clean Air Acts with the SCAQMD's RECLAIM program. Rule 2005 establishes pre-construction requirements for new or modified RECLAIM facilities to ensure that operation of such facilities does not interfere with progress towards the attainment of AAQS without unnecessarily restricting economic growth. RECLAIM is a market based incentive program designed to allow facilities flexibility in achieving emission reduction requirements for NO_x and SO_x using methods that include add-on emission controls, equipment modifications, reformulated products, operational changes, shutdowns, and the purchase of excess emission reductions. The SVEP will be subject to the NO_x new source review requirements of Rule 2005. However, the proposed new equipment will not be subject to the SO_x new source review requirements of Rule 2005 because the RECLAIM program does not include SO_x emissions from natural gas combustion equipment for applicability purposes. However, due to a lack of SO_x emission reduction credits available from the District emission reduction bank, the project is evaluating the option of voluntarily entering the SO_x RECLAIM program. SVEP will not be subject to the Federal PSD rules and regulations.

A facility can be subject to more than one of these pre-construction review programs depending on the type of criteria pollutants and criteria pollutant precursors they will emit. The relevant criteria pollutants and precursors are summarized in Table 8.1-42. A criteria pollutant (e.g., NO_x, SO_x) can be subject to both nonattainment (i.e., new source review) and attainment (i.e., PSD) pre-construction review programs if it is an attainment pollutant while another secondary pollutant (e.g., ozone for NO_x) is a nonattainment pollutant. A new or modified facility can be subject to the elements of all three programs as shown in Table 8.1-43.

TABLE 8.1-42
Criteria Pollutant Precursors

Criteria Pollutant	Precursor
Ozone	VOC, NO_x
NO_2	NO_x
SO_2	SO_x
Sulfate	SO_x
PM_{10}	VOC, NO_x, SO_x

TABLE 8.1-43
SVEP Pre-construction Review Elements for Criteria Pollutants

Element	Regulation XIII New Source Review	Rule 2005 New Source Review for RECLAIM	Regulation XVII Prevention of Significant Deterioration*
Pre-construction Air Quality Monitoring	-	-	NO_x, SO_x
BACT	CO, PM_{10}, VOC, NH_3, SO_x	NO_x, SO_x	NO_x, SO_x
Emission Offsets	CO, PM_{10}, VOC, SO_x	NO_x, SO_x	-
Air Quality Impact Analysis	CO, PM_{10}, VOC, SO_x	NO_x, SO_x	NO_x, SO_x
Protection of Class I Areas	PM_{10}, SO_x	NO_x, SO_x	NO_x, SO_x
Visibility, Soils, and Vegetation Impact Analysis	PM_{10}, SO_x	NO_x, SO_x	NO_x, SO_x

* SVEP is not subject to the federal PSD requirements.

Pre-construction Air Quality Monitoring—The SCAQMD may, pursuant to its regulations, require pre-construction ambient air quality monitoring. Pre-construction monitoring data must be gathered over a 1-year period to characterize local ambient air quality. SCAQMD may approve a shorter monitoring period of maximum anticipated ambient concentration. Pre-construction monitoring may not warranted if sufficient data exist in the project region to adequately define current and background air quality.

Best Available Control Technology (BACT)—BACT must be applied to any new or modified source resulting in an increase in criteria pollutants, ozone depleting compounds, or NH_3 emissions. The SCAQMD defines BACT as the following:

> "…the most stringent emission limitation or control technique which:
>
> has been achieved in practice for such category or class of source, or,
>
> is contained in any EPA approved SIP for such category or class of source. A specific limitation or control techniques shall not apply if the owner or operator of the proposed source demonstrates to the satisfaction of the EO or designee that such limitation or control techniques is not presently achievable, or,
>
> is any other emission limitation or control technique, found by the EO or designee to be technologically feasible for such class or category of sources or for a specific source, and cost effective as compared to measures as listed in the AQMP or rules adopted by the District Governing Board."

Emission Offsets—For a new or modified facility located in SCAQMD Zone 2 (as is the SVEP), sufficient emission reduction credits (ERCs) must be provided to offset the increase in CO, PM_{10}, SO_x, and VOC emissions at a 1.2:1 offset ratio.

For a new or modified facility located in SCAQMD Zone 2 (as is the SVEP), sufficient RECLAIM Trading Credits (RTCs) must be provided to offset the annual increase in NO_x emissions for the first year of operation at a 1:1 offset ratio. This would also apply to SO_x if the facility decides to voluntarily enter the RECLAIM program for SO_x.

Air Quality Impact Analysis—An air quality dispersion analysis must be conducted, using a mass emissions-based screening analysis contained in the rule, or an approved dispersion model, to evaluate impacts of increased criteria pollutant emissions from any new or modified facility on ambient air quality. Individual source emissions (not total project emissions) must not cause a significant increase in ambient nonattainment pollutant concentrations as defined by the levels shown in Table 8.1-44. Since the project area is classified as an attainment area for NO_2, the SCAQMD significance thresholds for this pollutant do not apply at this time.

An air quality dispersion analysis must also be conducted, using an approved dispersion model, to evaluate impacts on ambient air quality of significant PSD increases of NO_x and SO_x emissions from any new or modified major stationary source. Project emissions must not cause an exceedance of any federal or state AAQS and the increase in ambient air concentrations must not exceed the allowable increments shown in Table 8.1-45.

TABLE 8.1-44
SCAQMD Significance Thresholds for Ambient Nonattainment Pollutants Concentrations[a]

Pollutant	Averaging Period	Most Stringent Ambient Air Quality Standard	SCAQMD Significant Increase
NO_2[b]	1-hour	500 µg/m^3	20 µg/m^3
	annual	100 µg/m^3	1 µg/m^3
CO	1-hour	23,000 µg/m^3	1,100 µg/m^3
	8-hour	10,000 µg/m^3	500 µg/m^3
PM_{10}	24-hour	50 µg/m^3	2.5 µg/m^3
	annual	30 µg/m^3	1 µg/m^3
Sulfate[c]	annual	30 µg/m^3	--
	24-hour	25 µg/m^3	--

[a] Including nonattainment pollutant precursors.
[b] Precursor to non-attainment pollutants ozone and PM_{10}
[c] Precursor to non-attainment pollutant PM_{10}

TABLE 8.1-45
PSD Class II Increments

Pollutant	Averaging Period	Allowable Increment (µg/m^3)
NO_2	annual	25
SO_2	3-hour	512
	24-hour	91
	annual	20

Protection of Class I Areas—A modeling analysis must be conducted to assess the impacts of project emissions on visibility in nearby Class I areas if the increase in NO_x and PM_{10} emissions exceeds 40 tpy or 15 tpy, respectively, and the location of the source, relative to the closest boundary of a specified Federal Class I area, is within the distances specified in Rule 1303, Table C-1. The increase in ambient air quality concentrations for the PSD attainment pollutants (i.e., NO_x and SO_x) within the nearest Class I area must also be characterized if there is a significant emission increase associated with the new or modified major source. SVEP is not within the distances specified in Rule 1303, Table C-1.

Visibility, Soils, and Vegetation Impacts—Pursuant to Rule 1703, impairment to visibility, soils, and vegetation resulting from project NO_x or SO_x emissions as well as project associated commercial, residential, industrial, and other growth must be analyzed. Cumulative impacts to local ambient air quality must also be analyzed.

Administering Agency: SCAQMD with EPA Region IX and CARB oversight.

SCAQMD Rule 1401—New Source Review of Toxic Air Contaminants
Authority: H&SC §40000 et seq., H&SC §40400 et seq.

Purpose and Requirements: Rule 1401 (New Source Review of Toxic Air Contaminants) establishes allowable risks for new or modified sources of TAC emissions. Rule 1401 specifies limits for maximum individual cancer risk (MICR), cancer burden, and noncarcinogenic acute and chronic hazard indices (HIs) for new or modified sources of TAC emissions. While Rule 1401 does not specifically require the application of T-BACT to any new or modified source that emits carcinogenic TACs, the rule MICR risk threshold is relaxed when T-BACT is applied. The health risks resulting from project emissions, as demonstrated with a risk assessment, must not exceed the risk thresholds shown in Table 8.1-46

TABLE 8.1-46
Health Risk Thresholds

Risk Criteria	Risk Threshold
MICR (w/o T-BACT)	1×10^{-6}
MICR (w/ T-BACT)	10×10^{-6}
Cancer Burden	0.5
Chronic HI	1
Acute HI	1

Administering Agency: SCAQMD.

SCAQMD Regulation XXX—Federal Operating Permit
Authority: H&SC §40000 et seq., H&SC §40400 et seq.

Purpose and Requirements: Regulation XXX (Title V Permits) provides for the issuance of federal operating permits that contain all federally enforceable requirements for stationary sources as mandated by Title V of the Clean Air Act. Regulation XXX requires major facilities and acid rain facilities undergoing modifications to obtain an operating permit containing the federally enforceable requirements mandated by Title V of the Clean Air Act. An owner or operator of a facility subject to Title V shall not construct, modify, or operate equipment without first obtaining a permit revision that allows such construction, modification, or operation. Prior to commencement of construction, an application must be submitted to the District presents all information necessary to evaluate the subject facility and determine the applicability of all regulatory requirements.

Administering Agency: SCAQMD, with EPA Region IX oversight.

SCAQMD Regulation XXXI—Acid Rain Permit

Authority: H&SC §40000 et seq., H&SC §40400 et seq.

Purpose and Requirements: Regulation XXXI (Title IV—Acid Rain Permit Program) provides for the issuance of acid rain permits in accordance with Title IV of the Clean Air Act. Regulation XXXI requires a facility subject to Title to hold emissions allowances for SO_x, and to monitor SO_x, NO_x, and CO_2 emissions and exhaust gas flow rates (monitoring of operating parameters such as fuel use and fuel constituents is an allowable alternative to exhaust CEM systems). An acid rain facility, such as the SVEP, must also obtain an acid rain permit as mandated by Title IV of the Clean Air Act. A permit application must be submitted to the SCAQMD at least 24 months before operation of the new units commence. The application must identify all relevant sources at the facility, a compliance plan for each unit, applicable standards, and estimated commencement date of operation.

Administering Agency: SCAQMD, with EPA Region IX oversight.

SCAQMD Regulation IX—Standards of Performance for New Stationary Sources

Authority: H&SC §40000 et seq., H&SC §40400 et seq.

Purpose and Requirements: Regulation IX (Standards of Performance for New Stationary Sources) incorporates, by reference, the provisions of Part 60, Chapter I, Title 40 of the Code of Federal Regulations. Regulation IX requires compliance with federal Standards of Performance for Stationary Gas Turbines. Subpart KKKK (Standards of Performance for Stationary Gas Turbines) applies to combustion turbines with a power output at peak load of equal to or greater than 1 MW. Turbines rated at 30 MW or greater would be required to meet a NO_x emissions limit of 0.39 lb/Mw-hr. SO_2 compliance options consist of either meeting a fuel sulfur limit of less than or equal to 0.05 percent S by weight, or an emissions limit of 0.58 lb/MW-hr.

Administering Agency: SCAQMD, with EPA Region IX oversight.

SCAQMD Prohibitory Rules

Authority: H&SC §40000 et seq., H&SC §40400 et seq., indicated SCAQMD Rules

Purpose and Requirements: Relevant local prohibitory rules of the SCAQMD include the following:

- **Rule 401—Visible Emissions:** Establishes limits for visible emissions from stationary sources. Rule 401 prohibits visible emissions as dark as or darker than Ringelmann No. 1 for periods greater than 3 minutes in any hour.
- **Rule 402—Nuisance:** Prohibits the discharge from a facility of air pollutants that cause injury, detriment, nuisance, or annoyance to the public, or that damage business or property.
- **Rule 403—Fugitive Dust:** Establishes requirements to reduce the amount of PM entrained in the ambient air as a result of man-made fugitive dust sources. Rule 403 requires the implementation of best available control measures to minimize fugitive dust emissions and prohibits visible dust emissions beyond the property line; a 50 $\mu g/m^3$ incremental increase in PM_{10} concentrations across a facility (as measured by upwind and downwind concentrations); and track-out of bulk material onto public, paved roadways.

- **Rule 407—Liquid and Gaseous Air Contaminants:** Establishes limits for CO and SO_x emissions from stationary sources. Rule 407 prohibits CO and SO_x emissions in excess of 2,000 ppm and 500 ppm, respectively, from any source. In addition, equipment that complies with the requirements of Rule 431.1 is exempt from the SO_x limit. Since the facility will comply with Rule 431.1, the SO_x provisions of Rule 407 will not be further addressed.
- **Rule 409—Combustion Contaminants:** Establishes limits for particulate emissions from fuel combustion sources. Rule 409 prohibits particulate emissions in excess of 0.1 grains per cubic foot of gas at 12 percent CO_2 at standard conditions.
- **Rule 431.1—Sulfur Content of Gaseous Fuels:** Establishes limits for the sulfur content of gaseous fuels to reduce SO_x emissions from stationary combustion sources. Rule 431.1 limits the sulfur content of natural gas to 16 ppmv.
- **Rule 431.2—Sulfur Content of Liquid Fuels:** Establishes limits for the sulfur content of liquid fuels to reduce SO_x emissions from stationary combustion sources. Rule 431.2 limits the sulfur content of Diesel fuel to 0.05 percent by weight.
- **Rule 474—Fuel Burning Equipment—Oxides of Nitrogen:** Establishes limits for emissions of NO_x from stationary combustion sources. However, NO_x RECLAIM facilities are exempt from the provisions of Rule 474. Since the SVEP is also a NO_x RECLAIM facility, Rule 474 is not applicable to the project and will not be addressed further.
- **Rule 475—Electric Power Generating Equipment:** Establishes limits for combustion contaminant (i.e., PM) emissions from subject equipment. Rule 475 prohibits PM emissions in excess of 11 lb/hr (per emission unit) or 0.01 grain per dry standard cubic foot (gr/dscf) at 3 percent O_2.
- **Rule 476—Steam Generating Equipment:** Establishes limits for emissions of NO_x and combustion contaminants (i.e., PM) from subject equipment. However, NO_x RECLAIM facilities are exempt from the NO_x provisions of Rule 476. Furthermore, the PM provisions of Rule 476 are superseded by those of Rule 475. Therefore, Rule 476 is not applicable to the SVEP and will not be further addressed.
- **Rule 53A—Specific Contaminants:** Establishes limits for emissions of sulfur compounds (i.e., SO_x) and combustion contaminants (i.e., PM) from stationary sources. Rule 53A prohibits SO_x and PM emissions in excess of 500 ppm and 0.1 gr/dscf at 12 percent CO_2, respectively.
- **Rule 1110.2—Stationary Internal Combustion Engines:** Establishes emissions limits and operational parameters for internal combustion engines greater than 50 bhp. Emergency engines which operate less than 200 hours per year are exempt from the requirements of the rule.
- **Rule 1134—Emissions of Oxides of Nitrogen from Stationary Gas Turbines:** Establishes limits for emissions of NO_x from the stationary gas turbines. However, NO_x RECLAIM facilities are exempt from the provisions of Rule 1134. Therefore, Rule 1134 is not applicable to the SVEP and will not be addressed further.

- **Rule 1135—Emissions of Oxides of Nitrogen from Electric Power Generating Systems:** Rule 1135 is not applicable to the SVEP and will not be addressed further.
- **Rule 1146—Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters:** Rule 1146 is not applicable to the SVEP and will not be addressed further.

Administering Agency: SCAQMD, with EPA Region IX and CARB oversight.

8.1.5.2 Conformance of Facility

As addressed in this section, the SVEP is designed, and will be constructed and operated, in accordance with relevant federal, state, and local requirements and policies concerning protection of air quality.

8.1.5.2.1 Consistency with Federal Requirements

The SCAQMD has been delegated authority by the USEPA to implement and enforce most federal requirements that are applicable to the SVEP, including the new source performance standards. The district has not been delegated the authority to implement PSD review for attainment pollutants.

The EPA PSD program requirements apply on a pollutant-specific basis to:

- A new major facility that will emit 250 tpy or more, or if it is one of the special PSD source categories in the federal Clean Air Act and will emit 100 tpy or more; or
- A facility that emits 250 tpy or more, with net emissions increases since the applicable PSD baseline date that exceed the modeling threshold levels shown in Table 8.1-47.

TABLE 8.1-47
District and EPA PSD Requirements Applicable to Simple-Cycle Combustion Turbines

Pollutant	PSD Facility Applicability Level	Modeling Threshold Level	Facility Emissions	Modeling Required	Applicable District Regulation
NO_x	250 tpy	250 tpy	74.8	no	Regulation 17
SO_2	250 tpy	250 tpy	5.38	no	Regulation 17
PM_{10}*	250 tpy	250 tpy	52.9	no	Regulation 17
CO	250 tpy	250 tpy	123.8	no	Regulation 17
VOC	250 tpy	not required	20.9	-	-

* Facility emissions are based on 3,468 hours of operation (268 hours are in startup/shutdown). All particulate matter from the SVEP is assumed to be emitted as PM_{10}. Includes cooling tower.

As stated previously, the SVEP does not exceed any of the SCAQMD/PSD significance levels.

Compliance with the District regulations ensures compliance and consistency with the corresponding federal requirements as well. The SVEP will also be required to comply with the Federal Acid Rain requirements (Title IV). Since the District has received delegation for implementing Title IV through its Title V permit program, the SVEP will secure a District Title V permit that imposes the necessary requirements for compliance with the Title IV Acid Rain provisions.

8.1.5.2.2 Consistency with State Requirements

State law sets up local air pollution control districts and air quality management districts with the principal responsibility for regulating emissions from stationary sources. As discussed above, the SVEP is under the local jurisdiction of the SCAQMD, and compliance with District regulations will ensure compliance with state air quality requirements.

8.1.5.2.3 Consistency with Local Requirements

The District has been delegated responsibility for implementing local, state, and federal air quality regulations (except PSD) in the region surrounding the project site. The SVEP is subject to District regulations that apply to new sources of emissions, to the prohibitory regulations that specify emission standards for individual equipment categories, and to the requirements for evaluation of impacts from toxic air pollutants. The following sections include the evaluation of facility compliance with the applicable District requirements.

Under the regulations that govern new sources of emissions, the SVEP is required to secure a pre-construction Determination of Compliance from the District (Rule 1301(b)(2)), as well as demonstrate continued compliance with regulatory limits when the SVEP becomes operational. The pre-construction review includes demonstrating that the SVEP will use BACT and will provide any necessary emission offsets; i.e., ERCs and/or RTCs.

Best Available Control Technology

Applicable BACT levels are shown in Table 8.1-48, along with anticipated potential facility emissions. SCAQMD Rule 1303 requires the SVEP to apply BACT for emissions of NO_x, VOC, SO_x, CO and PM_{10} (criteria pollutants) for any net emissions increase. Rule 1401 provides for project approval or disapproval based on a combination of T-BACT and risk determinations. The SVEP will emit some of these latter pollutants in detectable quantities; therefore, Rule 1401 is applicable to the SVEP. As shown in the table, BACT is required for NO_x, VOC, SO_2, CO, and PM_{10}. The calculation of facility emissions was discussed in AFC Section 8.1.2.

TABLE 8.1-48
Facility Best Available Control Technology (BACT) Requirements.

Pollutant	Applicability Level	Facility Emission Level (lb/day)*	Devices Required to Have BACT
VOC	any net emissions increase	280.2	Turbines, IC Engine, Cooling Tower
NH_3	any net emissions increase	589.2	Turbines, IC Engine, Cooling Tower
NO_x	any net emissions increase	1007.4	Turbines, IC Engine, Cooling Tower
SO_2	any net emissions increase	73.0	Turbines, IC Engine, Cooling Tower
PM_{10}	any net emissions increase	716.7	Turbines, IC Engine, Cooling Tower
CO	any net emissions increase	1634.2	Turbines, IC Engine, Cooling Tower

* Including cooling tower.

BACT for the applicable pollutants was determined by reviewing the District BACT Guidelines and determinations posted on the District website, the recent BACT guidelines published by CARB applicable to Power Plant siting (July 1999), USEPA's BACT/LAER Clearinghouse, and other available BACT literature and surveys conducted by other air agencies. A summary of the review is provided in Appendix 8.1F. For the gas turbines, the District considers BACT to be the most stringent level of demonstrated emission control that is feasible and/or achieved in practice. The SVEP will use the BACT measures discussed below.

As a BACT measure, the SVEP will limit the fuels burned to natural gas, a clean burning fuel. Liquid fuels will not be fired in the turbines at the SVEP. Burning of liquid fuels in the gas turbine combustors and duct burners would result in greater criteria pollutant emissions than if the units burned only gaseous fuels. This measure acts to minimize the formation of all criteria air pollutants.

BACT for NO_x emissions will be the use of low-NO_x-emitting equipment and add-on controls. The SVEP has selected a gas turbine equipped with water injection for NO_x control. The gas turbine water injected standard combustors will generate a maximum of 25 ppmvd NO_x, corrected to 15 percent O_2 at loads at the anticipated load and operational ranges. In addition, the SVEP will use an SCR system to further reduce NO_x emissions to 2.5 ppmvd NO_x, corrected to 15 percent O_2 (3-hour average). The District BACT guidelines indicate that BACT from large simple cycle combustion turbines is an exhaust concentration not to exceed 5 ppmvd NO_x, corrected to 15 percent O_2; therefore, the SVEP will meet the necessary BACT requirements for NO_x. The District BACT Guideline determination for NO_x from gas turbines is shown in Appendix 8.1F.

BACT for CO emissions will be achieved by use of clean fuels (natural gas), and implementation of good combustion practices. In addition, the SVEP units will be equipped with oxidation catalysts for further control of CO. Standard combustors equipped with water injection emit acceptable levels of combustion CO while still maintaining low NO_x formation. The SVEP has specified a CO limit of 6 ppmvd, corrected to 15 percent O_2, at the anticipated load and operational ranges. The District BACT guidelines indicate that BACT from large simple cycle combustion turbines is 6 ppmvd CO, corrected to 15 percent O_2. CO emissions from the SVEP HRSG stacks will meet the District BACT requirements. The CO emission rate from the gas turbines, as measured at the exhaust stacks, will not exceed 6 ppmvd, corrected to 15 percent O_2 during normal operations. CO emissions will be higher during turbine startups. A review of recent BACT determinations for CO from simple cycle peaking gas turbines is provided in Appendix 8.1F.

BACT for VOC emissions will be achieved by the use of clean fuels, and implementation of good combustion practices. BACT for VOC emissions from combustion devices has historically been the use of good combustion practices and use of clean fuels. In addition, VOC emissions are expected to be further reduced as a result of the proposed CO oxidation catalyst. The amount of reduction is not estimated herein, but recent data indicate that VOC reductions on the order of 50-90 percent are routinely seen. With the use of the water injection, CO catalyst, and advanced combustion turbine design, VOC emissions leaving the stacks will not exceed 2.0 ppmvd, corrected to 15 percent oxygen. This level of emissions meets the SCAQMD BACT requirements.

BACT for $PM_{10}/PM_{2.5}$ and SO_2 is good combustion practices and the use of gaseous (clean) fuels. As mentioned above, use of clean burning natural gas fuel will result in minimal particulate and sulfur dioxide emissions.

BACT for the cooling tower consists of using high efficiency drift eliminators with a drift rating of 0.0005 percent.

BACT for the IC engine firing diesel fuel (fire pump) consists of using low sulfur diesel fuels, limiting the operational hours of the engines, and meeting the BACT emissions levels currently determined as applicable by the SCAQMD (see Appendix 8.1F).

New Source Review

The SVEP is a new major polluting facility as defined by SCAQMD regulations (Rule 1302). Therefore, it is subject to the District NSR regulations. Notwithstanding the above, a detailed modeling analysis was performed and the results are presented in Section 8.1.2.

As discussed below, the specific District Regulation XIII criteria for conducting modeling analyses have been met.

Regulation XIII requires that the modeling be conducted with appropriate meteorological and topographic data necessary to estimate impacts. The SVEP modeling analyses used District-approved U.S. Geological Service topographic data for the surrounding area and District-approved weather data gathered from the Riverside meteorological monitoring station. As discussed above, the meteorological data meet the requirements of USEPA guidance.

Regulations XII and XVII require a demonstration that emission increases subject to the NSR and PSD programs not interfere with the attainment or maintenance of any State or national ambient air quality standards for each applicable pollutant, unless adequate emissions offsets are provided. As shown in Tables 8.1-44 and 8.1-35, the SVEP will not exceed any SCAQMD NSR or the EPA PSD significance levels. In addition, mitigation (offsets) will be provided for increases of NO_x, SO_x, VOC, CO, and PM_{10} emissions. Therefore, project impacts on state and federal ambient air quality standards are not considered significant. Additionally, the modeling analysis results do not show an exceedance of State or national ambient air quality standards, with the exception of the state and federal annual and 24-hour average PM_{10} standards, which are already being exceeded.

For an application that triggers PSD modeling requirements, 40 CFR 52.21 and Regulation XVII require that ambient monitoring data be gathered for 1year preceding the submittal of a complete application, or a District-approved representative time period. However, if the air quality impacts of the SVEP do not exceed the specified *de minimis* levels on a pollutant-specific basis, the SVEP is exempted from the pre-construction monitoring requirement. The air quality impacts of the SVEP's NO_x, CO, SO_2 and PM_{10} emissions were below their respective *de minimis* levels, as shown in Table 8.1-32, and therefore the exemption applies to the proposed project. The District-operated ambient monitoring stations as delineated in Section 8.1.1 are representative of existing air quality in the vicinity of the project, and were used to determine existing ambient concentrations.

40 CFR 52.21 and Regulation XVII requires applicants to demonstrate that emissions from a project located within 10 kilometers (6.2 miles) of a Class I area will not cause or contribute to the exceedance of any national ambient air quality standard or any applicable Class I PSD increment. Because the nearest Class I areas, are well beyond this distance from the SVEP, this section is not applicable to the proposed facility.

40 CFR 52.21 and Regulation XVII require an applicant for a permit subject to a PSD air quality analysis to provide additional analysis of the impact of the facility on visibility, soils and vegetation. The visibility analysis is provided in Section 8.1.2. Soils and vegetation data

are provided in 8.2 (Biological Resources) and 8.11 (Soils and Agriculture) of the AFC. These sections indicate that no sensitive soils or vegetation types are present in the primary impact area. In addition, the SVEP facility will use clean fuels and best available control technology. As such, impacts to soils or vegetation are not expected to occur since the emissions from the facility will not cause a violation of any federal primary or secondary standard, with the exception of the state and federal annual and 24-hour average PM_{10} standards, which are already being exceeded.

40 CFR 52.21 and Regulation XVII require the use of GEP stack height. Conformance with the GEP stack height requirement was demonstrated in the modeling analysis conducted for the SVEP.

Regulation XXX, Major Facility Review (Title V permit program), applies to facilities that emit greater than the rule applicability or threshold values on a pollutant-specific basis. The SVEP will emit pollutants above the Title V applicability thresholds, and it is an affected facility under Title IV and is subject to a NSPS, and as such, under the Title V permit program the SVEP will be required to file an application for a Title V operating permit prior to the commencement of construction of the facility. The Phase II acid rain requirements will also apply to the SVEP. As a Phase II Acid Rain facility, the SVEP will be required to provide sufficient allowances for every ton of SO_2 emitted during a calendar year. The SVEP will obtain any necessary allowances on the current open trade market. The SVEP will also be required to install and operate continuous monitoring systems; District enforcement of its rules will ensure installation of these systems.

General Prohibitory Rules

The general prohibitory rules of the District are applicable to the SVEP. Each of these rules is discussed below and a determination of compliance is presented.

- **Rule 401—Visible Emissions:** Establishes limits for visible emissions from stationary sources. Rule 401 prohibits visible emissions as dark as or darker than Ringelmann No. 1 for periods greater than 3 minutes in any hour. Use of natural gas as the only combustion turbine fuel will ensure compliance with visible emissions requirements.

- **Rule 402—Nuisance:** Prohibits the discharge from a facility of air pollutants that cause injury, detriment, nuisance, or annoyance to the public, or that damage business or property. None of the proposed processes at the SVEP facility is expected or anticipated to result in a public nuisance.

- **Rule 403—Fugitive Dust:** Establishes requirements to reduce the amount of PM entrained in the ambient air as a result of man-made fugitive dust sources. Rule 403 requires the implementation of best available control measures to minimize fugitive dust emissions and prohibits visible dust emissions beyond the property line; a 50 $\mu g/m^3$ incremental increase in PM_{10} concentrations across a facility (as measured by upwind and downwind concentrations); and track-out of bulk material onto public, paved roadways. Mitigation measures proposed during the construction phase of the project will ensure compliance with Rule 403.

- **Rule 407—Liquid and Gaseous Air Contaminants:** Establishes limits for CO and SO_x emissions from stationary sources. Rule 407 prohibits CO and SO_x emissions in excess of 2,000 ppm and 500 ppm, respectively, from any source. In addition, equipment that complies with the requirements of Rule 431.1 is exempt from the SO_x limit. Since the facility will comply with Rule 431.1, the SO_x provisions of Rule 407 need not be addressed with respect to compliance. In addition, the proposed BACT technologies proposed for SVEP will ensure compliance with Rule 407.

- **Rule 409—Combustion Contaminants:** Establishes limits for particulate emissions from fuel combustion sources. Rule 409 prohibits particulate emissions in excess of 0.1 grains per cubic foot of gas at 12 percent CO_2 at standard conditions. Use of natural gas and low sulfur diesel fuels will ensure compliance with Rule 409.

- **Rule 431.1—Sulfur Content of Gaseous Fuels:** Establishes limits for the sulfur content of gaseous fuels to reduce SO_x emissions from stationary combustion sources. Rule 431.1 limits the sulfur content of natural gas to 16 ppmv. Use of PUC grade natural gas will ensure compliance with Rule 431.1.

- **Rule 431.2—Sulfur Content of Liquid Fuels:** Establishes limits for the sulfur content of liquid fuels to reduce SO_x emissions from stationary combustion sources. Rule 431.2 limits the sulfur content of Diesel fuel to 0.05 percent by weight. Liquid fuels used by SVEP will comply with these standards.

- **Rule 474—Fuel Burning Equipment - Oxides of Nitrogen:** Establishes limits for emissions of NO_x from stationary combustion sources. However, NO_x RECLAIM facilities are exempt from the provisions of Rule 474. Since the SVEP is also a NO_x RECLAIM facility, Rule 474 is not applicable for purposes of compliance determinations.

- **Rule 475—Electric Power Generating Equipment:** Establishes limits for combustion contaminant (i.e., PM) emissions from subject equipment. Rule 475 prohibits PM emissions in excess of 11 lb/hr (per emission unit) or 0.01 gr/dscf at 3 percent O_2. Use of natural gas will ensure compliance with Rule 475.

- **Rule 476—Steam Generating Equipment:** Establishes limits for emissions of NO_x and combustion contaminants (i.e., PM) from subject equipment. However, NO_x RECLAIM facilities are exempt from the NO_x provisions of Rule 476. Furthermore, the PM provisions of Rule 476 are superseded by those of Rule 475. Therefore, Rule 476 is not applicable to the SVEP.

- **Rule 53A—Specific Contaminants**: Establishes limits for emissions of sulfur compounds (i.e., SO_x) and combustion contaminants (i.e., PM) from stationary sources. Rule 53A prohibits SO_x and PM emissions in excess of 500 ppm and 0.1 gr/dscf at 12 percent CO_2, respectively. Use of natural gas and low sulfur diesel fuels will ensure compliance with Rule 53A.

- **Rule 1110.2—Stationary Internal Combustion Engines:** Establishes emissions limits and operational parameters for internal combustion engines greater than 50 bhp. Emergency engines which operate less than 200 hours per year are exempt from the requirements of the rule.

- **Rule 1134—Emissions of Oxides of Nitrogen from Stationary Gas Turbines:** Establishes limits for emissions of NO_x from the stationary gas turbines. However, NO_x RECLAIM facilities are exempt from the provisions of Rule 1134. Therefore, Rule 1134 is not applicable to the SVEP.
- **Rule 1135—Emissions of Oxides of Nitrogen from Electric Power Generating Systems:** Rule 1135 is not applicable to the SVEP.
- **Rule 1146—Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters:** Rule 1146 is not applicable to the SVEP.

A summary of the demonstration of compliance with applicable LORS is provided in Table 8.1-49. Due to the size of this table, it is included at the end of this section.

8.1.6 Agencies and Agency Contacts

The USEPA has responsibility for enforcing, on a national basis, the requirements of many of the country's environmental and hazardous waste laws. California is under the jurisdiction of USEPA Region IX, located in San Francisco. Region IX is responsible for the local administration of USEPA programs for California, Arizona, Nevada, Hawaii, and certain Pacific trust territories. USEPA's activities relative to the California air pollution control program focus principally on reviewing California's submittals for the State Implementation Plan (SIP). The SIP is required by the federal Clean Air Act to demonstrate how all areas of the state will meet the national ambient air quality standards within the federally specified deadlines.

The California Air Resources Board was created in 1968 by the Mulford-Carrell Air Resources Act, through the merger of two other state agencies. CARB's primary responsibilities are to develop, adopt, implement, and enforce the state's motor vehicle pollution control program; to administer and coordinate the state's air pollution research program; to adopt and update as necessary the state's ambient air quality standards; to review the operations of the local air pollution control districts; and to review and coordinate preparation of the SIP for achievement of the federal ambient air quality standards.

When the state's air pollution statutes were reorganized in the mid-1960s, local air pollution control districts (APCDs) were required to be established in each county of the state. There are three types of districts: county, regional, and unified. In addition, special air quality management districts (AQMDs), with more comprehensive authority over non-vehicular sources as well as transportation and other regional planning responsibilities, have been established by the Legislature for several regions in California, including SCAQMD.

Air pollution control districts and air quality management districts in California have principal responsibility for developing plans for meeting the state and federal ambient air quality standards; for developing control measures for non-vehicular sources of air pollution necessary to achieve and maintain both state and federal air quality standards; for implementing permit programs established for the construction, modification, and operation of sources of air pollution; for enforcing air pollution statutes and regulations governing non-vehicular sources; and for developing employer-based trip reduction programs.

Each level of government has adopted specific regulations that limit emissions from stationary combustion sources, several of which are applicable to this project. The other agencies having permitting or oversight authority for this project are shown in Table 8.1-50.

TABLE 8.1-50
Air Quality Agencies

Agency	Authority	Contact
USEPA Region IX	Oversight of permit issuance, enforcement	Mr. Matt Haber, Dep. Director Air Division USEPA Region IX 75 Hawthorne Street San Francisco, CA 94105 (415) 744-1254
South Coast Air Quality Management District	Permit issuance, enforcement	Ms. Pang Mueller, Manager Permitting and Compliance South Coast Air Quality Management District 21865 East Copley Drive Diamond Bar, CA 91765 (909) 396-2433
California Air Resources Board	Regulatory oversight	Mr. Mike Tollstrup, Chief Project Assessment Branch, CARB 2020 L Street Sacramento, CA. 95814 (916) 322-6026

8.1.7 Permits Required

The Permit to Construct permit is required in accordance with SCAQMD Rule 201. A complete application for a “Permit to Construct”, including the required Title V application forms, will be filed with the SCAQMD within 1 week (5-7 working days) of the SVEP AFC filing.

TABLE 8.1-49
Laws, Ordinances, Regulations, Standards (LORS), and Permits for Protection of Air Quality

LORS	Purpose	Regulating Agency	Permit or Approval	Schedule and Status of Permit
Federal				
Clean Air Act (CAA) § 160-169A and implementing regulations, Title 42 US Code §7470-7491, Title 40 CFR Part 51 and 52-Prevention of Significant Deterioration (PSD)	Requires PSD review and facility permitting for construction if new and modified stationary sources if air pollution. PSD review applies to attainment pollutants only.	EPA Region IX	After project review, issues ATC/PTO with conditions limiting emissions.	Agency approval to be obtained prior to the start of construction.
CAA §171-193, 42 USC §7501 et seq., 40 CFR Parts 51 & 52 (New Source Review)	Requires new source review (NSR) facility permitting for construction or modification of specified stationary sources. NSR applies to pollutants for which ambient concentration levels are higher than NAAQS.	SCAQMD, with EPA Region IX oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
CAA §401 (Title IV), 42 USC §7651 et seq., 40 CFR parts 51 & 52 (Acid Rain Program)	Requires reductions in NO_x and SO_x emissions.	SCAQMD, with EPA Region IX oversight	Issues Acid Rain permit after review of application.	Permit to be obtained prior to commencement of operation.
CAA §501 (Title V), 42 USC §7414, 40 CFR Part 64 (CAM Rule)	Establishes on-site monitoring requirements for emission control systems.	SCAQMD, with EPA Region IX oversight	Exempt from CAM requirements.	Title V permit to be obtained prior to commencement of construction.
CAA §501 (Title V), 42 USC §7661, 40 CFR Part 70 (Federal Operating Permits Program)	Establishes comprehensive operating permit program for major stationary sources.	SCAQMD, with EPA Region IX oversight	Issues Title V permit after review of application.	Permit to be obtained prior to commencement of construction.
CAA §112, 42 USC §7412, 40 CFR Part 63 (National Emission Standards for Hazardous Air Pollutants)	Establishes national emission standards to limit HAPs from existing major sources of HAP emissions.	SCAQMD, with EPA Region IX oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
CAA §111, 42 USC §7411, 40 CFR Part 60 (New Source Performance Standards – NSPS)	Establishes national standards of performance for new stationary sources.	SCAQMD, with EPA Region IX oversight	After project review, issues ATC with conditions addressing emissions, CEMs, operation, etc.	Agency approval to be obtained before start of construction.
EPCRA §313 (TRI Program)	Requires subject facilities to report toxic releases to the environment.	EPA Region IX	Because the electric generating equipment will be fired by natural gas, the project is exempt from this regulation.	Not Applicable

TABLE 8.1-49
Laws, Ordinances, Regulations, Standards (LORS), and Permits for Protection of Air Quality

LORS	Purpose	Regulating Agency	Permit or Approval	Schedule and Status of Permit
State				
California Health & Safety Code 17 (H&SC) §44300-44384; California Code of Regulations (CCR) §93300-93347 (Toxic "Hot Spots" Act)	Requires preparation and biennial updating of facility emission inventory of hazardous substances; risk assessments, notification, and plans to reduce risks.	SCAQMD, with CARB oversight	After project review, issues ATC with conditions limiting emissions.	Screening HRA submitted as part of AFC, CEC approval of AFC
California Public Resources Code §25523(a); 20 CCR §§1752, 1752.5, 2300-2309, and Division 2, Chapter 5, Article 1, Appendix B, Part(k) (CEC and CARB Memorandum of Understanding)	Requires that CEC's decision on PTC include requirements to assure protection of environmental quality; AFC required to address air quality protection, including mitigation.	CEC	After project review, issues Final Determination of Compliance (FDOC) with conditions limiting emissions.	CEC approval of AFC, i.e., FDOC, to be obtained prior to CEC approval.
H&SC §41700 (Public Nuisance)	Prohibits emissions in quantities that adversely affect public health, other businesses, or property.	SCAQMD, with CARB oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
Local				
SCAQMD Regulation XIII, H&SC §40910-40930 (Review of New or Modified Sources)	NSR: Requires that pre-construction review be conducted for all proposed new or modified sources of air pollution, including BACT, emissions offsets, and air quality impact analysis. NSR applies to pollutants for which ambient concentration levels are higher than state or federal AAQS.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues ATC with conditions limiting emissions. Note—since the WCEP project is a new RECLAIM facility for NO_x, NSR addressed under Regulation XX.	Agency approval to be obtained before start of construction.
SCAQMD Air Quality Plan & H&SC §41914	Defines proposed strategies including stationary source control measures and new source review rules.	SCAQMD, with CARB oversight	Addressed in SCAQMD Rules and Regulations.	Not applicable
SCAQMD Regulation XVII, H&SC §39500 et seq. (Prevention of Significant Deterioration Program)	Requires PSD review and facility permitting for construction of new or modified major stationary sources of air pollution. PSD review applies to pollutants for which ambient concentrations are lower than NAAQS.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues ATC with conditions addressing emissions, operations, CEMs, etc.	Agency approval to be obtained before start of construction.

TABLE 8.1-49
Laws, Ordinances, Regulations, Standards (LORS), and Permits for Protection of Air Quality

LORS	Purpose	Regulating Agency	Permit or Approval	Schedule and Status of Permit
SCAQMD Regulation IX, Part 60, Chapter I, Title 40, Subparts KKKK, H&SC §40000 et seq. (Standards of Performance for New Stationary Sources)	By reference, incorporates the provisions of 40 CFR Part 60, Subpart KKKK compliance with Federal Standards of Performance for Stationary Gas Turbines	SCAQMD, with EPA Region IX oversight	After project review, issues ATC with conditions addressing emissions, operations, CEMs, etc.	Agency approval to be obtained before start of construction.
SCAQMD Regulation XX Rule 2005 (New Source Review for RECLAIM)	RECLAIM requires that pre-construction review be conducted for all proposed new or modified sources of air pollution at subject RECLAIM NO_x and SO_x facilities, including BACT, RECLAIM trading credits, and air quality impact analysis.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues ATC with conditions addressing emissions, RTC acquisition and use, CEMs, monitoring and reporting.	Agency approval to be obtained before start of construction.
SCAQMD Regulation XXX, H&SC §40000 et seq., §40400 et seq. (Federal Operating Permits)	Implements operating permits requirements of CAA Title V.	SCAQMD, with CARB and EPA Region IX oversight	Issues Title V permit after review of application.	Permit to be obtained prior to commencement of construction.
SCAQMD Regulation XXXI, H&SC §40000 et seq., §40400 et seq. (Acid Deposition Control)	Implements acid rain regulations of CAA Title IV.	SCAQMD, with CARB and EPA Region IX oversight	Issues Title IV permit after review of application.	Permit to be obtained prior to commencement of operation. The permit application must be submitted to the SCAQMD at least 24 months prior to commencement of operation.
SCAQMD Rule 53.A, H&SC §40000 et seq., and H&SC §40400 et seq. (Specific Contaminants)	Limits SO_x and PM emissions from stationary sources.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
SCAQMD Rule 201, H&SC §40000 et seq., and H&SC §40400 et seq. (Permit to Construct)	Defines procedures for review of new and modified sources of air pollution.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before commencement of construction.
SCAQMD Rule 401, H&SC §40000 et seq., §40400 et seq. (Visible Emissions)	Limits visible emissions to no darker than Ringelmann No. 1 for periods greater than 3 minutes in any hour.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before commencement of construction.
SCAQMD Rule 402, H&SC §40000 et seq., §40400 et seq. (Public Nuisance)	Prohibits emissions in quantities that cause injury, detriment, or annoyance to the public; or that damages businesses or property.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.

TABLE 8.1-49
Laws, Ordinances, Regulations, Standards (LORS), and Permits for Protection of Air Quality

LORS	Purpose	Regulating Agency	Permit or Approval	Schedule and Status of Permit
SCAQMD Rule 403, H&SC §40000 et seq., §40400 et seq. (Fugitive Dust)	Limits fugitive dust emissions from man-made fugitive dust sources.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
SCAQMD Rule 407, H&SC §40000 et seq., §40400 et seq. (Liquid and Gaseous Air Contaminants)	Limits CO and SO_x emissions from stationary sources.	SCAQMD, with CARB and EPA Region IX oversight	Covered as part of Rule 431.1.	Not Applicable
SCAQMD Rule 409, H&SC §40000 et seq., §40400 et seq. (Combustion Contaminants)	Limits PM emissions from fuel combustion.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
SCAQMD Rule 474, H&SC §40000 et seq., §40400 et seq. (Fuel Burning Equipment – Oxides of Nitrogen)	Limits NO_x emissions from stationary sources.	SCAQMD, with CARB and EPA Region IX oversight	Covered under Regulation XX.	Not Applicable
SCAQMD Rule 475, H&SC §40000 et seq., §40400 et seq. (Electric Power Generating Equipment)	Limits PM emissions from stationary sources.	SCAQMD, with EPA Region IX and CARB oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
SCAQMD Rule 476, H&SC §40000 et seq., §40400 et seq. (Steam Generating Equipment)	Limits NO_x and combustion contaminants from stationary combustion sources.	SCAQMD, with CARB and EPA Region IX oversight	Covered as part of Rule 475 and Regulation XX	Not Applicable
SCAQMD Rule 431.1, H&SC §40000 et seq., §40400 et seq. (Sulfur Content of Gaseous Fuels)	Limits the sulfur content of natural gas to reduce SO_x emissions from stationary combustion sources.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
SCAQMD Rule 431.2, H&SC §40000 et seq., §40400 et seq. (Sulfur Content of Liquid Fuels)	Limits the sulfur content of Diesel fuel to reduce SO_x emissions from stationary combustion sources.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
SCAQMD Rule 1110.2, H&SC §40000 et seq., §40400 et seq. (Emissions from Stationary Internal Combustion Engines)	Limits emissions of NO_x, VOC, and CO from stationary internal combustion engines. Engines are exempt from this rule if each unit is operated less than 200 hours per year.	SCAQMD, with CARB and EPA Region IX oversight	Project exempt as each engine will be operated less than 200 hours per year.	Not Applicable
SCAQMD Rule 1134, H&SC §40000 et seq., §40400 et seq. (Emissions of Oxides of Nitrogen from Stationary Gas Turbines)	Limits NO_x from stationary gas turbines.	SCAQMD, with CARB and EPA Region IX oversight	Project exempt from regulation as facility is regulated under Regulation XX.	Not Applicable

TABLE 8.1-49
Laws, Ordinances, Regulations, Standards (LORS), and Permits for Protection of Air Quality

LORS	Purpose	Regulating Agency	Permit or Approval	Schedule and Status of Permit
SCAQMD Rule 1135, H&SC §40000 et seq., §40400 et seq. (Emissions of Oxides of Nitrogen from Electric Power Generating Systems)	Limits NO_x from electric power generating systems.	SCAQMD, with CARB and EPA Region IX oversight	Project exempt from regulation as facility is regulated under Regulation XX, and no boilers are proposed.	Not Applicable
SCAQMD Rule 1146, H&SC §40000 et seq., §40400 et seq. (Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters)	Limits NO_x and CO from industrial, institutional, and commercial steam generating units.	SCAQMD, with CARB and EPA Region IX oversight	Project exempt from regulation as no boilers are used to generate electricity.	Not Applicable
SCAQMD Rule 1401, H&SC §39650-39675 (New Source Review of Toxic Air Contaminants)	Establishes allowable risks for new or modified sources of toxic air contaminants and for control of emissions.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues ATC with conditions limiting emissions.	Agency approval to be obtained before start of construction.

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